The Iron Age

A Review of the Hardware and Metal Trades.

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Compound Rotative Pumping Engine for the Lynn Water Works.

The pumping engine shown in the accompanying illustration was constructed from the designs and under the patent of Mr. E. D. Leavitt, Jun., of Cambridgeport, Massachusetts, by Messrs. I. P. Morris & Co., engineers, Philadelphia. The engine was made to the order of Mr. G. H. Norman, who took a contract for the supply of the town of Lynn with water. The conditions of lift and delivery will be seen further on.

There are many novel features in the engine, which have been patented by the designer, the most noticeable of which is the arrangement of the steam cylinders, which are placed under the beam center and incline outwardly, so that their pistons are connected to the opposite ends of the beam, and move in opposite directions. The top of the high pressure cylinder exhausts, therefore, into the top of the low pressure cylinder, and the bottom of the high pressure cylinder into the bottom of the low pressure cylinder. By this arrangement the passages between the two cylinders, at least at the bottom, are made very short and direct. A single valve controls the connection between the two cylinders at the bottom, whilst two valves are used in the connection at the top, one close to each cylinder, so that the capacity of this passage is not added to the clearance of the high pressure cylinder when being filled with steam, nor is it exhausted when the low pressure cylinder is being exhausted. It thus answers, in some measure, to the reservoir of a compound marine engine. Both cylinders are steam jacketed at sides and ends, and, together with the steam connections, are clothed with asbestos covering, and lagged with black walnut.

It will be seen that in our engraving the high pressure cylinder appears of the same diameter as the low pressure cylinder; this is due to the fact that the lagging has been kept away from the body of the cylinder, an air space being thus formed between the two. All the steam valves are of the gridiron form, and are moved by revolving cams, which have grooves of proper shape cut in their sides, in which run steel rollers on pins projecting from the sides of rocker arms. Those for the high pressure steam valves are composed of two discs, fitted closely together, but not attached. One of these discs, for the opening movement, is keyed fast to the camshaft, and has its outer edge of the proper shape to open the valve, so as to give it the required lead; the other, for the closing movement, has on its inner side a projecting lip, whose interior edge has the proper shape to move the rocker arm so as to close the valve. This latter plate is not keyed rigidly to the camshaft, but is driven by a double feather working in a slot cut in its boss parallel with the bore, and also working in a slot cut in the shaft at an angle with the axis, so that any motion given to the feather in the line of shaft changes the relative position of the cam with its shaft, and consequently with the crank, thereby causing steam to be cut off earlier or later. The motion is imparted to the feather by the governor.

The air pump is double acting, and worked by a connection with the beam. The discharge from the hot well is into the pump well, and the boiler feed water is drawn from the hot well by an independent donkey steam pump.

The pump is of the bucket and plunger type. There is a supplementary pipe and valves to reduce the friction incident to the passage of the water through a single bucket valve in the piston. The valves are of the usual double beat form; the bottom, or foot valves, are seven in number, the upper valves three—one in the piston and two in the supplementary passage; each of the exterior bottom valves has an independent cover on the chamber, for the readier inspection and removal of the valves. To supply air to the air chamber there is a small air cock on the lower valve chamber. The air drawn in through this cock on the up stroke of the pump somewhat reduces the quantity of water discharged by the pump. Careful experiments, previous to and in the early part of the test, established the effect of this cock, by measurements at the weir, and an uniform opening of this cock was kept during forty-eight hours of the trial. During the other four hours the average loss of action was a trifle less than during the forty-eight hours, during one hour the cock being completely closed.

The boilers are two plain horizontal tubes set in brickwork, fired beneath, flame passing the length of the boiler and returning through a number of 3 inch tubes to a front connection, thence passing up into a single flue on the top of the boilers in brickwork, and to the chimney. There is no clothing at the front end of the boilers. There are automatic dampers attached to the boilers.

The water is drawn by the pump from a large well, supplied by a main from the collecting pond, and discharged through a 20 inch force main. This main is of cast iron for a portion of its length, thence by a cement-lined sheet iron pipe of the same diameter, to the bottom of a gate-house in the service reservoir. During the experiment, to which we shall come presently, it was thence conducted by a vertical cast iron pipe of sufficient hight to discharge into a wooden trunk, connected with a weir box, where the capacity of the pump was determined.

The principal dimensions are show in the following table:

Diameter of high pressure cylinder	17½ in.
" low pressure "	36 in.
" high pressure " piston rods	3 in.
" low pressure " "	3½ in.
" air pump	11¼ in.
" pump barrel	26 1-10 in.
" plunger	18½ in.
" bottom and supplementary valve outside lower seat	15⅞ in.
" bottom and supplementary valve inside upper seat	10 in.
" piston valve, outside lower seat	22 in.
" " inside upper seat	16½ in.
" fly-wheel	26½ ft.
Length of stroke of steam and water piston	7 ft.
" " air pump	44½ in.
Distance between end centers of beam	11 ft.
Steam lead, high pressure cylinder, top	0 ft.
" " " bottom	0 ft.
" low pressure " top	0 ft.
" " " bottom	1-16 in.
Exhaust lead, high pressure " top	1-16 in.
" " " bottom	1-16 in.
" low pressure " top	5 3-16 in.
" " " bottom	3 in
Closure before end of stroke:	
High pressure cylinder, top	9⅞ in.
" " " bottom	14 11-16 in.
Low pressure " top	6 in.
" " " bottom	5 5-16 in.
Clearances:	
High pressure cylinder, top	·0231 of vol of cyl'er.
" " " bottom	·0360 " "
Low pressure " top	·0109 " "
" " " bottom	·0104 " "
Top connection bet'n cylinders	·0134 of high pressure cylinder.
Weight of fly-wheel	10·7 tons.
Weight of beams	4·2 tons.
Weight of moving parts connected with beams	5 tons.
Boilers:	
Diameter of shell	5 ft.
" steam drum	3 ft.
" steam tubes	3 in.
Length of shell	16 ft.
Hight of drum	6 ft.
Length of grate	5 ft.
Width of grate	5 ft. 6 in.
Force main:	
Length of force main from pump to top of vertical pipe at reservoir	1904 ft.
Hight of top of vertical pipe above bottom of well	163·31 ft.

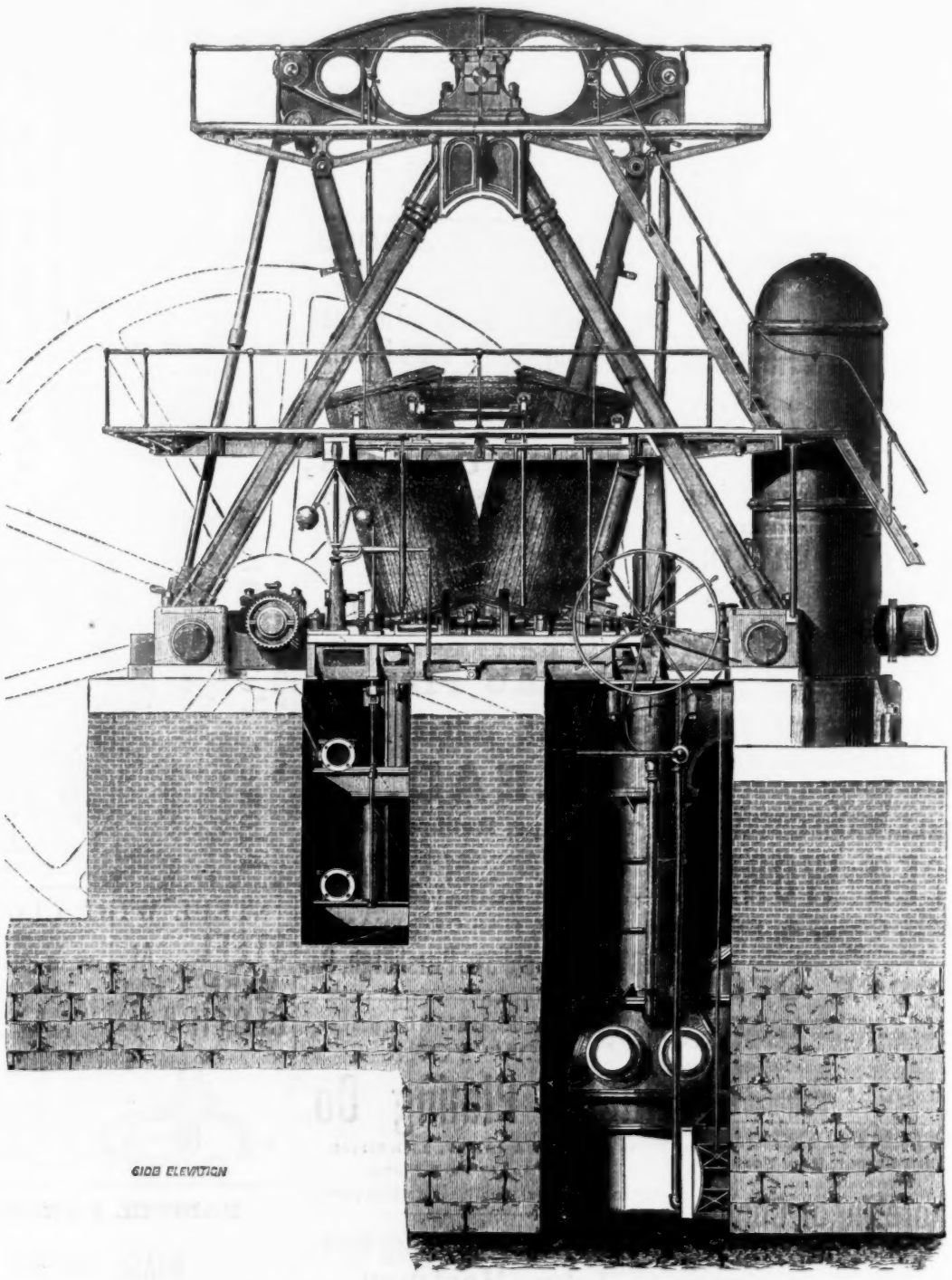
The actual performance of the engine in regular work is excellent, as will be seen from the following report:

TABLE SHOWING THE PERFORMANCE OF THE PUMPING ENGINE AT THE LYNN WATER WORKS FOR THE FOUR MONTHS ENDING MARCH 31ST, 1874.

	Dec. 1873	Jan. 1874	February	March.
No. of revolutions	237,844	270,300	242,812	255,733
Lbs. of coal used f'r firing & b'nk-ing	75,900	91,770	78,900	80,100
No. of gal'ns pump'd into the reservoir, allowing 4 % for loss of action in the pump.	44,369,798	50,424,465	45,296,578	47,706,991
Average lift in feet, including friction	167·24	164·00	164·15	164·08
No. of cal'ns d'liv'd into the reservoir ₩ lb. of coal	584·58	549·46	571·10	595·59
No. of gal'ns raised 100 ft. high per lb. of coal.	977·67	901·12	942·39	977·24
Duty in foot lbs. per 100 lbs. coal, calculated from pressure as shown by gauge and total am't coal used for firing & bank'g, no deduction made for ashes or cinders	84,890,504	79,248,097	81,826,614	84,852,803

COST OF PUMPING.

Coal for firing and running, 306,520 lbs. at $7·50 per net ton	$1,149 45
Coal for banking, 20,150 lbs. at $8·50 per net ton	85 64
Wood, 2 cords, at $11 per cord	22 00
Coal for heating, 39,300 lbs., at $7·50 per net ton	147 49
Oil, waste, packing and stores	65 96
Repairs to engine	10 75
Repairs to boilers	164 97
Engineers and firemen	650 00
	$2,295 36
Cost of raising 1,000,000 gallons into the reservoir	$12 22·25
Cost of raising 1,000,000 gallons 1 ft. high	7·41
Cost of coal for raising 1,000,000 gallons into reservoir	6 90·68
Cost of coal for raising 1,000,000 gallons 1 ft. high	4·15



SIDE ELEVATION

COMPOUND ROTATIVE PUMPING ENGINE FOR THE LYNN WATER WORKS.

The New Laboratory at Oxford.

The building consists principally of three floors, and is surmounted by a tower of fifty-nine feet in height, and contains twenty-six large rooms and numerous apartments, each specially adapted and devoted to experiments in certain departments of physical science. In the magnetic room is placed the great electro-dynamometer of the British Association. The room used for the experiments in heat at present contains an apparatus devised by Prof. Maxwell for determining the viscosity of air. The galvanic battery is connected by properly insulated wires with the lecture room and other portions of the building. The battery which will be employed is, of course, confined in a room fitted expressly thereto, and is of the style known as Sir William Thomson's tray battery. The lecture room will afford accommodation for about one hundred and eighty students, the seats for the class rising at an angle of about thirty degrees, and three doors providing sufficient means of egress for the audience. In the room allotted to experiments in electricity of high tension, an apparatus contrived by Mr. Latimer Clark has been introduced, for the purpose of keeping the air of the room dry. This consists of a heated copper roller, over which passes an endless band of flannel. The roller is heated by means of gas lights within it, by which, being constantly burning, every part of the flannel becomes hot. The vapor which arises from the heated flannel is carried off by the current of air which supplies the burners inside the roller. The flannel, when thus dried and cooled, passes into the open air of the room, where it again absorbs moisture, and thus the air of the room becomes so dry that the electrical instruments are preserved in a highly insulating condition. The electricity passes from the electrical machine to the table in the lecture room by insulated wires connected with the prime conductor of the machine. The highest room in the building occupies the upper portion of the tower. In this room will be placed a Bunsen's water-pump, the water from which will thus have a vertical fall of considerably more than fifty feet. This pump will be used to exhaust a large receiver, from which pipes will communicate with the different rooms; so that, if it be desired to exhaust the air from any vessel, it will only be necessary to connect it with one of these pipes, and turn on a vacuum. For a more perfect exhaustion, the Sprengel or other air pump can be employed. On the top of the tower will be fixed a wooden mast, carrying a pointed metal rod, for the purpose of collecting atmospheric electricity.

Locomotives.

We abstract the following important facts from the sixth annual report of the artisans of the German railway administration:

Locomotive boilers made of sheets of cast steel have not fulfilled the expectations entertained for them, although it is hoped that more favorable results will be obtained when improvements have been made in the manufacture of the steel plates. Copper bolts are recommended for the first row; steel ones are only to be employed when the feed water and fuel are both good. Locomotive boilers have been made to resist a pressure of 10 atmospheres.

Screw link motion answers well for locomotives where the slide motion is not too heavy. In general the lever is to preferred. Cast iron slide valves are good, and last longer, if the material possesses the right hardness, brass ones are expensive and soon wear out, iron bronze gives satisfactory results; slide valves with partial lining do well but cannot be employed if grooved. A number of companies have had bad luck with lined valves.

For locomotive and tender axle boxes, a majority of the railway companies recommend brass with white metal lining. Some had favorable results from the use of white metal alone; very few employ the red without lining it with an alloy, usually 87 parts copper and 13 tin, or 23 parts and 5 tin, also 82 copper and 18 tin. No definite results have been obtained from the use of phosphorus bronze.

Heberlein's brake has been generally successful; yet in many respects it may be improved. Iron blocks or shoes are gradually replacing wooden ones for breaks; wrought iron shoes have not been sufficiently tested, cast iron ones wear out quite rapidly which makes them expensive. Those of cast steel or cast iron mixed with steel filings are recommended.

The Values of Metals.—The following table shows the comparative commercial value of some of the metals. The first eight in the table are only obtainable in microscopic quantities, but the prices at which they are sold would be as shown were they obtainable by the pound:

VALUE PER POUND AVOIRDUPOIS.

Indium	$2,520·00	Silver	$18·85
Vanadium	2,520·00	Cobalt	7·75
Ruthenium	1,400·00	Cadmium	6·00
Rhodium	700·00	Bismuth	3·63
Palladium	65·00	Sodium	3·20
Uranium	576·58	Nickel	2·50
Osmium	325·28	Mercury	1·25
Iridium	317·44	Antimony	36
Gold	301·45	Tin	33
Platinum	115·20	Copper	25
Thallium	108·77	Arsenic	15
Chromium	5·40	Zinc	11
Magnesium	46·50	Lead	07
Potassium	23·00	Iron	03

The circular lately addressed by Herr Krupp to the workpeople in the Essen steel works, reminds them that the high wages earned during late years were due to a prosperity in the trade which has since disappeared. Work, instead of being plentiful, has become scarce, and dismissals are taking place on all sides. A reduction of wages has therefore been found necessary, and will have to be proceeded with until the cost of production is again proportioned to the market value of the article. But Herr Krupp, while regretting this necessity, believes that the policy in question will enable him to keep his works open and the full strength of his establishment engaged. He trusts that all his true workmen will thus be free from anxiety for the future, and he promises that the firm will continue to study their interests as it has heretofore done. The *Cologne Gazette* is in a position to deny positively the statement of contemporary German journals that Herr Krupp had largely reduced his staff, according to one journal to the extent of 50 per cent. Only 500 workmen have been dismissed during the the past few months, and at the present time 10,500 persons are receiving wages in the Essen works, and 5000 are employed in the mines.

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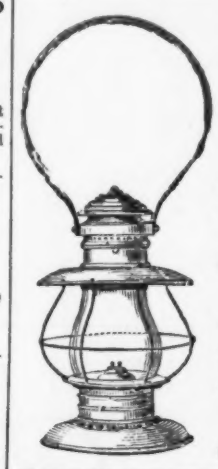

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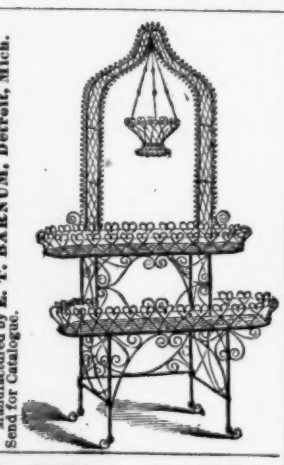

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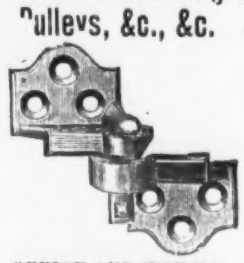

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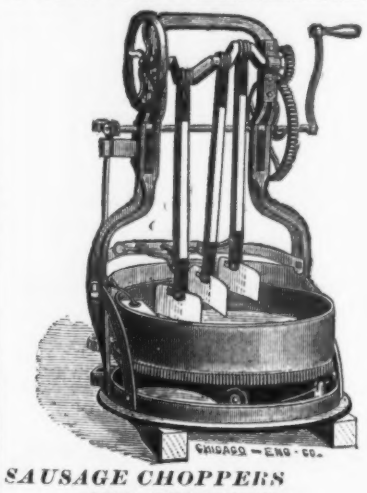

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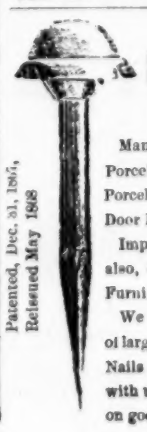

Patented, Dec. 31, 1867, Reissued May 1868

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Knitting by Machinery.

One of the most interesting mechanical operations we have ever witnessed is the manufacture of knit goods by machinery. The mechanism by which this operation is performed is at once simple and intricate—at least it so appears to the casual observer; and when the function of each part is understood, the wonder remains that they can together produce results so perfect without the guidance of a controlling intelligence. The knitting frame shown in the accompanying illustration is a standard machine, and has been in use for twenty years, during which time many improvements have been made in it, until its operation is now as nearly perfect as it can be made. The table is of iron, paneled; the shaft bearings long and well babbitted, and the counter pulleys are large in diameter and narrow faced, so as to allow of ready shifting of the belt by the stop motion.

The cylinder has a long, large bearing, and the principal wear is at the lower end of the hub. The metal is thick where the cap screw enters, and has three arms, which enables the attendant to reach the burr adjuster without the necessity of cutting a hole in the cloth. The cap screws are turned out of solid seamless iron.

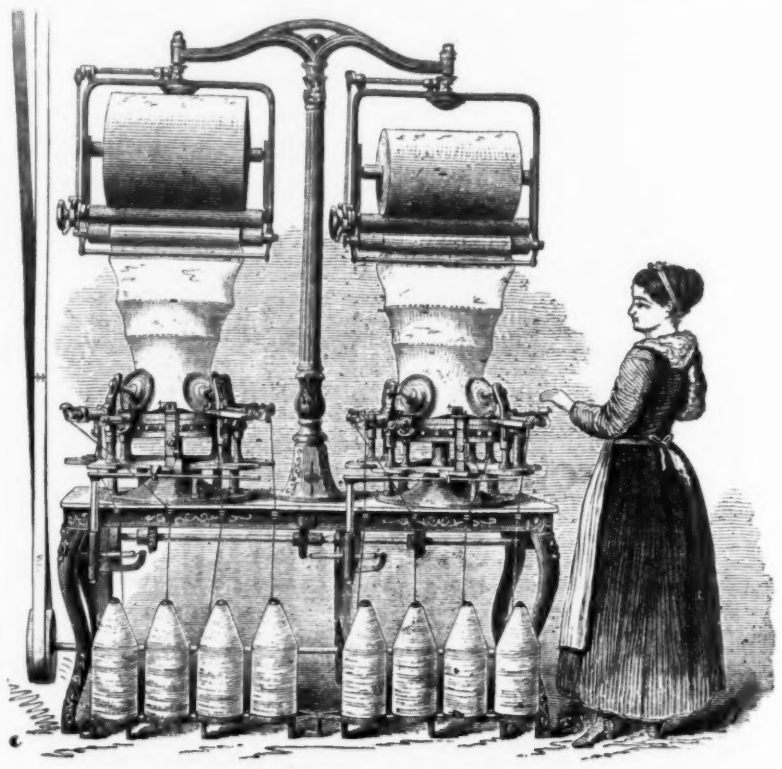
The slotted circle which supports the feed stands is firmly bolted, and allows the attendant to nicely adjust his stands to any sized cylinder. The bedplate and tube are cast together, instead of separate, securing perfect rigidity. The center shaft is held up to its place by a single set screw, which, when loosened, allows the shaft to drop down, and so gives room without disturbing the take-up to take off the cylinder with needles in their places. The sinker and presser wheel stands have been made heavier, and an excellent stop motion is provided, which does not allow the needles to load up. By means of a new inside plate and burr adjuster, after the burr is set for angle, radial position, and depth, which can be done before the cloth is put on, the burr may be raised or lowered to a nicety without losing the other positions. For this purpose a two sized double-threaded set screw is employed, cut right and left hand, and so placed as to be regulated from under the cylinder without cutting the cloth, and so connected as to have no lost motion in its thread; it is so cut that the burr may be varied or depressed any number of hundreds of an inch.

The take-up is a light iron frame, and hangs and turns on a hardened steel step, so shaped as to form of itself a self-oiler. It is driven by a gear motion instead of the usual cam; said gear has a hunting tooth, which gives to the taking motion an ever changing movement, which, contrary to the cam, tends to keep the cylinder true and steady. The emery rolls are not geared together, but are so placed as to get the same result. The swing rod is squared at each end where it enters the sustaining arms to equalize the strain on the cloth, in case one of the long spiral springs is drawn out more than its mate. The arrangement to raise the dogs and loosen the cloth is instant in its effect. In changing from a sleeve cylinder to body size, a new take-up is not required.

A machine or table complete has two cylinders or heads, each head generally knits four threads at once, and each thread, or the machinery necessary to knit it, is called a feed. The machines are finished ready to belt except the needles. The same table does nicely for a single cylinder. One girl can attend to six cylinders. The table occupies a space of 6 feet 6 inches in length by 2 feet 4 inches in width; total hight over all is about 9 feet; weight, all told, is 1340 lbs.

The needles used are the spring beard, and for convenience, preparatory to putting them in the cylinder, are placed in a mold in pairs, and leaded by having a composition, resembling solder, poured around them while so held. The gauge is determined by measuring the needles, and counting the leads when set on the cylinder. For instance, 14 gauge has 14 leads or 28 needles in 3 inches in length, measured in the circumference. To change from plain to rib requires only four new presser burrs. In regard to the proper speed of the needles for the different sized cylinders, needles, and yarn, some believe a quick speed to be best, and others consider it policy to use more machinery and run it more slowly.

As examples of the capabilities of the machine, the manufacturer informs us that a single cylinder apparatus of 22 inches diameter, 20 gauge, 4 feeds, knitting common hosiery yarn, cotton and wool mixed, running 45 revolutions, has 920 needles, thus making 165,600 stitches per minute. A 16 inch cylinder, 20 gauge, 4 feeds cotton yarn, is running 79 revolutions, and making 212,352 stitches per minute; the same cylinder has been run as high as 85 revolutions on the same yarn, at which speed it made, per minute, 228,480 stitches. Another cylinder, 19 inch, 30 gauge cotton yarn, is running 38 revolutions, has 1193 needles, and is making 181,374 stitches per minute. Usually an 18 inch cylinder, 13 gauge, is run 45 revolutions, and a table of 2 heads, which turns off, per day of 11 hours, 160 lbs. of knit cloth, averaging 15 dozen goods, exclusive of waste, is considered as doing fair. The machine is so geared within itself that 113 revolutions of the receiving shaft will give 45 revolutions of the cylinder. The receiving pulley is 10 inches in diameter, and is made for a 2½ inch belt. These remarkable machines are made by Mr. C. Tompkins, at Troy, N. Y., and are known as the Tompkins knitting frames.



KNITTING BY MACHINERY.

Glue.

"During the progress of a recent investigation, I observed," says Mr. Dana Hayes, "some chemical characters of commercial glue, that I believe have not been previously described.

Analyses of two samples of white glue of the best grade yielded the following results:

	No. 1 extra C'l glue.	Frozen glue.
Moisture (loss of weight at 212° Fah.)	16·70	16·28
Gelatin, with a little animal fibre and fats	79·85	80·42
Carbonate of lime	1·42	1·43
Sulphate of lime	0·41	0·34
Phosphate of magnesia	0·25	0·31
Alkaline salts	0·17	0·12
Silica, oxide of iron, &c.	0·09	0·08
Oxide of zinc	1·01	1·12
Total	100·00	100·00

Analyses of ten more samples of frozen and sheet glue, of common grades, and from different makers, showed the proportion of water contained in them to vary from 14 to 18 per cent., averaging 17 per cent. And the proportion of ash or mineral matter varied from 3 to 6 per cent., averaging rather less than 4 per cent. Two of these samples contained about 1 per cent. of white zinc, and two of them contained sulphate of lime. Analyses of two samples of commercial gelatin averaged 16½ per cent. of water, and 2·56 and 3·11 per cent. of ash respectively. There was no oxide of zinc or sulphate of lime in these gelatins. The presence of so much water was quite unexpected; and as the quantity is nearly the same in fresh and in seasoned specimens, it is not a make-weight, although steam is very freely used in the rooms where glue is packed by the manufacturers. The carbonate of lime comes from the quicklime used for cleaning and preserving the animal matter, or glue stock, while the sulphate of lime is formed by the addition of small quantities of sulphuric acid during the process of manufacture, to neutralize the lime that is carried forward by the solutions of glue. The oxide of zinc is said to be added to prevent souring, or the acidity caused by decomposition, and it also improves the color of the glue; but it is not very generally used, as these analyses indicate. I have heard of the use of sulphate of zinc, alum, magnesia, &c., by glue makers, but I did not find any other substance than those named above in these specimens, which represented the article commonly sold and used. The impure glues, or those containing the most mineral matter, became almost insoluble after they had been broken into small pieces and heated in a hot air bath (copper oven) at 212° Fahr., for two or three hours, until they ceased to lose weight; they then soften and become dough-like, but do not dissolve when boiled in water for some time. The purer gelatins were not so much injured, and one specimen, containing only 2·56 per cent. of ash, was not materially affected by this thorough drying. The solid sheet glue, while drying in this way, tumefied, and became very porous; the frozen glue did not alter in structure. The conclusions drawn from these experiments was that the excess of lime combines with the gelatin and, perhaps, with the extraneous animal matters of the glue, at the high temperature, forming a compound like lime soap, as the whole quantity of lime is refound in the insoluble portion left after boiling the dried glue in water. Such an explanation accounts for the difference noticed in the effect of drying upon gelatin and common glue."

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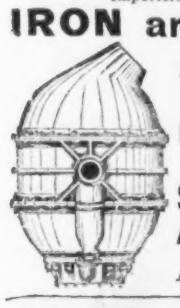

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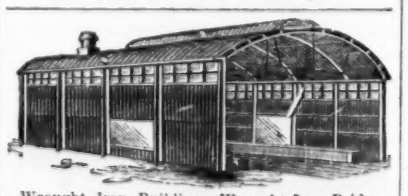

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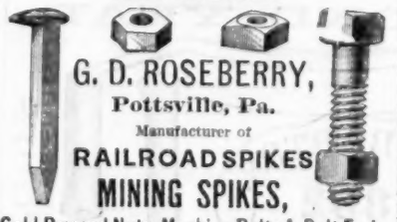

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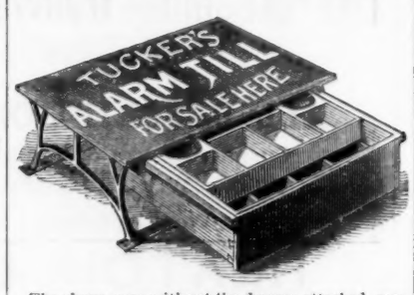

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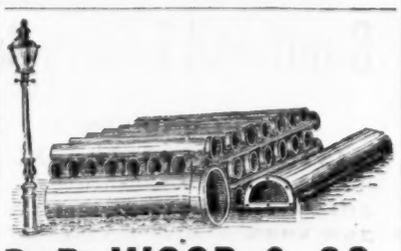

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Toope's Improved Grate Bar.

The grate bar shown in the accompanying illustrations is the invention of Mr. Charles Toope, and is manufactured by C. Toope & Co., at the Lexington Foundry, Eighty-eighth street, near Fourth avenue, N. Y. The inventor has had many years' experience as a practical engineer and iron molder. In the present device he has utilized his experience to produce a bar which, while having the greatest amount of air surface, will still retain the necessary strength. The invention, it is claimed, cannot be injured by contraction or expansion. The lock on the sides, in the center of each bar, holds it securely in its place, and prevents it from falling in case the ends should be burned off. The lugs on its sides are about two inches apart, and intersect each other. These, together with the crossbars between the flanges, on the lower side, prevent the bar from warping or twisting, and the flanges from widening or contracting. The bar is light, durable, and is claimed to give a large area of air surface, and, from its peculiar construction, to save from 25 to 40 per cent. in weight, according to size, as compared with other bars now in use. In the accompanying illustrations, Figure 1 represents the upper side and Figure 2 the lower side of the bar. These bars are now being very generally introduced, and sets have just been ordered for the boats of the Union Ferry Company. As the inventor makes them himself, and is prepared to furnish them by the pound or square foot at the ordinary price of castings, he proposes to underbid competitors in price, beside furnishing a grate bar which will secure general favor on its merits.

Fig. 1

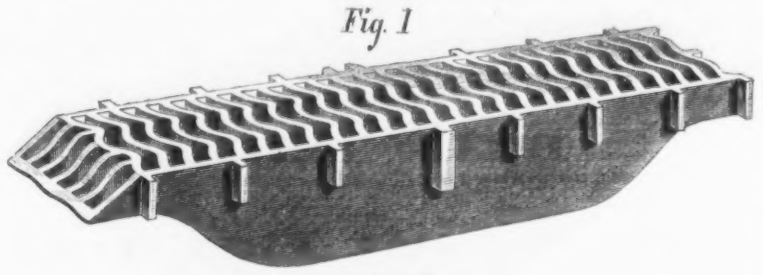
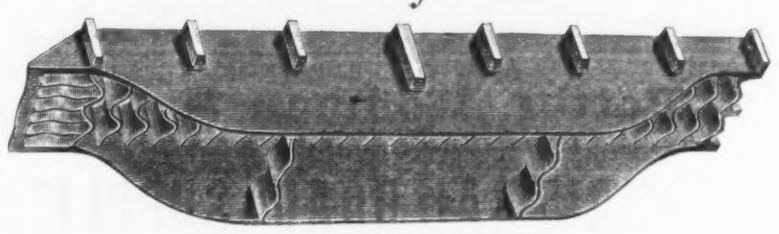


Fig. 2



TOOPE'S IMPROVED GRATE BAR.

The Huntoon Governor.

The governor of a steam engine is an apparatus, or attachment, by which the speed of the engine is maintained at a uniform rate, while variations take place in the amount of work performed. Many of the common and older forms of governor, while able to control the speed of an engine within certain narrow limits utterly fail when the changes in the load are extensive. In rolling mills and similar engines this is a very serious matter, because the whole power of the engine has to be exerted when the iron is passing through the rolls, and this, too, very suddenly, and, as the iron passes, the load is as suddenly taken off, leaving the engine with the merely nominal load of the rolls and its own friction. Engines under such circumstances are likely to "race" when the load is taken off, and slow down when they encounter the load. In steamships the racing in heavy weather, when the screw is at times but partially submerged, becomes a very dangerousmatter, and frequently causes serious breakages.

In rolling mills the variation in horse-power is not so great as in steamers, because the total horse-power is not as large. Yet in an English rolling mill for making solid steel tires we have records of an engine for driving two sets of rolls which has to suddenly exert upward of 500 horse-power, and is then as suddenly relieved of everything except the friction of the machinery. In such a case as this the old Watt governor is helpless. The momentum of the fly-wheel is used up before the governor can act sufficiently to put on the proper steam pressure, so the engine may be frequently slowed down, or even brought to a stand, and to carry it through the engineer must stand by the throttle.

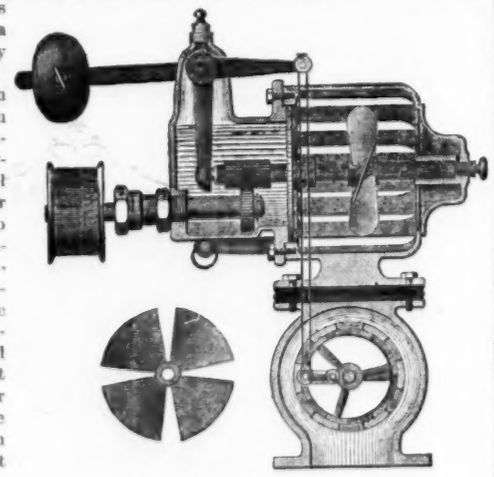
What is needed is a governor which will compel an engine to "come to speed" under all variations of steam pressure and of load. Such governors are by no means plentiful. Among the most perfect of these we class the governor which we illustrate—the invention of Mr. Huntoon, of Boston, and named after him. This has long been known both in America and England, and, from recent reports of English engineers, is performing admirably there.

The principle upon which the action of the governor is based is the constant resistance which a screw rapidly revolving in oil finds so long as the speed does not vary. This resistance, which varies with each change of speed, makes itself felt as an endwise thrust of the shaft upon which the screw is placed. In our engraving the "thrust" of the shaft is toward the left. This is met and resisted by an arm from the rock shaft shown at the top of the cut. Another arm projecting toward the left carries a weight which balances the "thrust" of the screw. When the engine is started the screw moves the lever until this balance is reached, and so long as it continues the relative position of the parts is unchanged, but if the speed changes, increasing for example, the thrust of the screw is increased, the weight is lifted to a new position. By making a connection between the rock shaft and the valve, as is shown in the engraving, this motion cuts off steam, and so reduces the speed to the normal rate. If the speed falls, the "thrust" is reduced, and the weight forces the screw back toward the left, opening the valve at the same time, and giving the engine more steam. The spur wheel on the propeller shaft is made with a broad face, so as to mesh with the driving gear in any position it may happen to occupy. The valve used is a cylindrical one, and of course balanced; its details of construction are shown in the drawing. The sensitive nature of this governor is well illustrated by a fact mentioned by Mr. J. Whitby before the Royal Cornwall Polytechnic Society, in England: "With an engine speed of from 60 to 100 revolutions per minute, a variation of one revolution per minute above or below the proper speed was instantly corrected by the governor diminishing or increasing a little the supply of steam to the engine, and so imperceptibly was this done that it was impossible to detect any variation in the speed except by watching the rising or falling of the governor weight." This was upon a rolling mill engine where the horse-power was constantly changing, the amount varying by as much as 400 horse-power in a second or so.

This governor can be changed in a moment, so that the speed of the engine may be increased or diminished without stopping the engine or changing the mechanism, the engine remaining perfectly governed at whatever speed it may be set. This is a point of much value and convenience, and contrasts favorably with many of the old devices.

With the Huntoon governor the main throttle or stop valve need only be used for stopping or starting. It is thrown wide open, and kept so while the engine is running and closed when it is desired to stop, the governor taking the whole work of regulating the speed so long as a sufficient pressure of steam is maintained.

In this country the most notable instance of the excellent work which this governor is doing is on a blooming mill engine in a Bessemer steel works. The work is rolling 2000 lbs. 14 inch ingots of steel in a 30 inch train directly connected. The reduction is in some cases over one inch at a pass. Steam pressure 60 to 70 lbs. A 25 foot, 40 ton fly-wheel is used. Revolutions 50. The load is increased in one revolution from what is needed to drive the engine empty to 500 or 600 horse-power, and as suddenly reduced, yet the speed does not vary one revolution per minute under these sudden changes.



THE HUNTOON GOVERNOR.

The Belgian Method of Rolling Thin Iron Plates.

Thin iron plates have been manufactured in Belgium and Germany for some time by a new method, to which the name of *Calmoterie* has been given. According to *La Revue Industrielle*, from which the following account is taken, the process is a very remunerative one: With two heating furnaces and a set of rolls, about 6000 plates, from 1 to 3½ millimeters (·039 to ·138 inches) in thickness, weighing 15 to 30 kilogrammes (33 to 66 lb.) have been turned out every month. The piles are made up of 35 per cent. of old rails with 65 per cent. of scrap iron in the interior; they are transformed into plates at a single heat, without again going into the furnace.

The mill consists of a pair of gauge rolls, a pair of roughing rolls, and a pair of finishing rolls. The first groove of the first pair is so constructed that the bloom receives a pressure as uniformly distributed over its surface as possible, so as to effect a perfect welding: the bloom is made in the form of a wedge, so as to facilitate its entrance. The second groove reduces the slab by one-fifth of its breadth, for the purpose of increasing the solidity of the iron, and of avoiding ragged edges. Next come four smooth rolls, the space between them being 70, 50, 30 and 20 millimeters (approximately 2¾ inches, 2 inches, 1 3-16ths and ¾ inches), which draw out the slab into a bar, varying in thickness with the intended dimensions of the plates; for those of 1 to 1½ millimeters (·039 to ·059 inch) it is 20 millimeters (¾ inch), and for those of greater thickness, 30 millimeters (1 3-16ths inch). The bar thus obtained has a breadth of about 170 millimeters (6¾ inches) and a length varying from 13 to 16 decimeters (4 feet 3 inches to 5 feet 3 inches); this is cut in two by means of shears worked off an eccentric keyed on to the coupling box of the upper roughing roll. These two lengths are each destined to become a plate; to this end, they are passed between preliminary rolls, which are 125 centimeters (4 feet 1 3-16ths inch) long, and are provided with an adjustment which permits of the bars being reduced, in five or six passes, into plates 65 centimeters (2 feet 1½ inches) in length. The upper roll is counterbalanced as carefully as possible, so as not to strain the adjusting screws, which are thus easily worked.

The finishing is effected by the aid of chilled rolls 125 centimeters (4 feet 1¼ inches) long. After three or four passes, those plates which are intended to have but a slight thickness are placed one upon another, and in five or six more passes, are reduced to the desired gauge. The rolls are 65 centimeters (2 feet 1½ inches) in diameter, and make 55 revolutions per minute, the engine being of 100 to 120 horse-power.

All the work is done, as we have already said, at a single heat and without the aid of a reheating furnace; this it is which constitutes the great economy of the manufacture. The piles weigh from 35 to 75 kilogrammes (77 to 165 lb.), according to the dimensions of the plates required; but their weight is kept within the latter figure for ease of handling. Their breadth is a little less than the length of the roughing rolls; their thickness, previously reduced by a screw press, is 16 centimeters (about 6¼ inches) at the front end, and from 20 centimeters (about 7¾ inches) at the back end; the length varying from 55 to 85 centimeters (21 to 33 inches). The wedge form of the blooms facilitates their being gripped by the rolls at the same time that it permits of the slag running off more freely, since the hinder portion is less solid.

The rough rolled iron which forms the outside is as thin as possible, so as to keep down the expense of the raw product; its minimum thickness is about 16 centimeters (6¼ inches), a figure arrived at in practice. It is as well not to reduce the thickness below this amount for fear of cracks at the edges, which would lead to too much waste.

The heating furnace is constructed so as to bring the iron to a uniform temperature throughout its whole substance; the Boetius arrangement lends itself best to this kind of work. The following are the dimensions of a furnace actually in use:

Length of sole, 250 centimeters (8 feet 2¼ inches); breadth, 150 centimeters (4 feet 11 inches).

Length of fire grate, 95 centimeters (3 feet 1¼ inches); breadth, 40 centimeters (15¾ inches).

Hight of bridge, 75 centimeters (2 feet 5½ inches); length, 1½ meter (nearly 5 feet).

Hight of vault, 65 centimeters (2 feet 1½ inches), which diminishes from the door to the lunette, where it is reduced to 30 centimeters (nearly 1 foot). The breadth of the lunette is 48 centimeters (1 foot 6⅞ inches).

The air necessary to the combustion enters by passages left in the brickwork of the hearth and bridge, and the different currents mingle in the vault, the end of which is also provided with air passages. The air cools the bridge and the sides of the hearth, and, after being heated, escapes near the sole by two rows of vertical apertures, finally mixing there with the products of combustion. It enters with a considerable speed, on account of the outer pressure and the draught; dampers fixed outside the orifices permit of this speed being regulated.

Seven to eight charges are made in a day, and each charge is composed of thirteen to seventeen piles. About 21 quintals (2 tons) of good coal are required for every twelve hours. The waste heat of two furnaces is made to fire a 50 horse-power boiler.

The furnaces should be erected as near as possible to the roll train, and the finishing rolls near the engine, inasmuch as they require the greatest amount of power.

The hands required for a roll train are—one foreman over the finishing rolls, one man to the roughing mills, two boys for cutting the bars, and two boys to help the foreman and man above mentioned. The furnace is worked by three men and a laborer; there are, therefore, altogether for the two furnaces and one roll train, nine skilled and five unskilled operatives.

The Deutsche Chemische Gesellschaft is becoming sensational. In a recent issue it informs us that a certain chemist has studied *orthoamidocresylparasulphurous* acid, and that by the aid of hydrochloric acid and chlorate of potash he has transformed it into *trichlerorthotolaquinone*. Further on the author discourses on *nitrorthocresylolparasulphurous* acid, and finally some other chemist hurls at us the fearful jaw paralyser—nitrate of *ethenyldenitrophenyldiamine*. All this *may* be true, but we are not prepared to accept the statement without further consideration.

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OLIVER'S

Chilled Plows.

These implements in their present form, though but few years before the public, show the following remarkable record:

1508 were sold in the season of 1871.
3049 " " " 1872.
7472 " " " 1873.
14,976 " " " 1874.

(Exclusive of sales in new territory, while for the season of 1875, the capacity of the works has been increased to turn out 30,000 plows complete.

The cause of this astounding result is that the OLIVER CHILLED PLOWS prove on trial to be all and more than we claim for them, on following points, viz:

1st. They are the lightest draft.
2nd. They are the most durable.
3rd. They are perfectly adjustable and have a center draft.
4th. They will scour in all kinds of soil.
5th. They are the cheapest plow used.
6th. They are the only chilled plows made.

Our first point is secured by the share and moldboard forming one continuous curve, thus compelling the soil to touch every part with equal firmness; the shape is easy and natural and abrupt angles do not exist, while our chilled iron possesses a peculiar smoothness and solidity throughout, far ahead of any other metal used in plows.

Our second point needs no explanation from us, as chilled iron is conceded by all to be the hardest and most durable metal used for this purpose.

Its temper is uniformly hard, and will not scratch nor corrode.

Our third point is secured by a movable beam, placed over the center of the work, which can be so nicely adjusted by moving to the right or left, that the plow will run without handling. With these plows the most uninteresting portion of farm labor becomes a pleasure and a pride.

Our fourth point is secured by the combination of our chilled metal with the common sense shape of moldboard and share. Every part of the metal below the ground is subject to equal wear, leaving no portion of it untouched to which the soil can attach and clog the plow. The change from gravelly to prairie soil can be made with facility, as the metal is so hard that it cannot be scratched; hence its peculiar smoothness is not disturbed and scour it must.

Our fifth claim is easy to substantiate, for the draft of OLIVER'S CHILLED PLOWS will average fully twenty-five per cent. below that of all others, which means that out of every four days' work with other plows, the labor of one day can be saved, by using

OLIVER'S CHILLED PLOWS,

with the same amount of power expended. The great durability of these plows, consequent upon the extreme uniformity and hardness of the chilled metal, is another item to be considered in this connection.

Our chilled moldboards, after plowing one hundred acres, show a loss of weight of from four to seven ounces, depending on the soil in which they are used.

This result cannot be equaled, much less surpassed, by any other metal, or combination of metals, ever used in plows.

Our sixth claim we will not discuss here, but should it be disputed by any one, we shall be happy to convince the most skeptical of its truthfulness. Call on us for the proofs at any time, and we pledge our words they shall be produced.

We are the only manufacturers in the world that devote their entire capital time and facilities to the production of plows, and the natural result is, perfection in the implement produced under such circumstances.

For full descriptive circulars explaining the merits of

OLIVER'S CHILLED PLOWS,

or other information relative thereto, address,

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Commission Merchants and General Agents execute orders for British manufactures on the lowest terms, and collect and forward goods for a very moderate payment. Agents for the sale of North Yorkshire Iron of a standard quality.

Iron.

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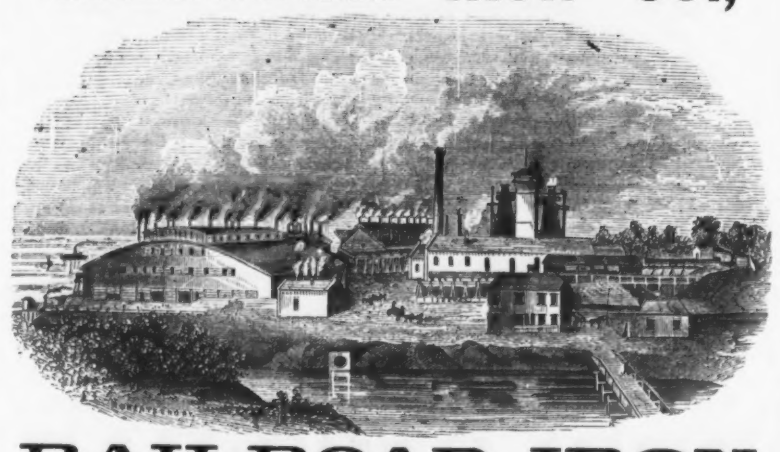

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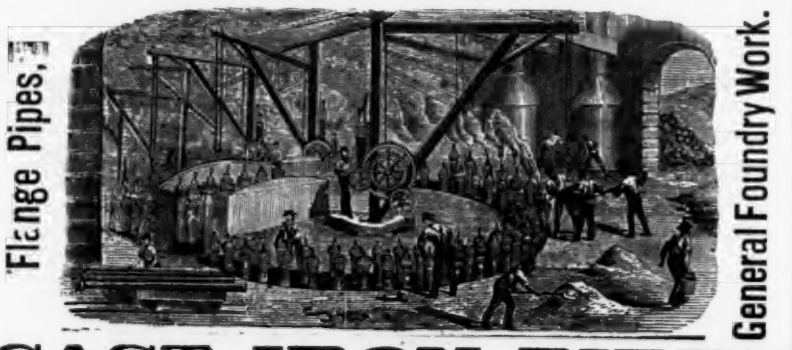

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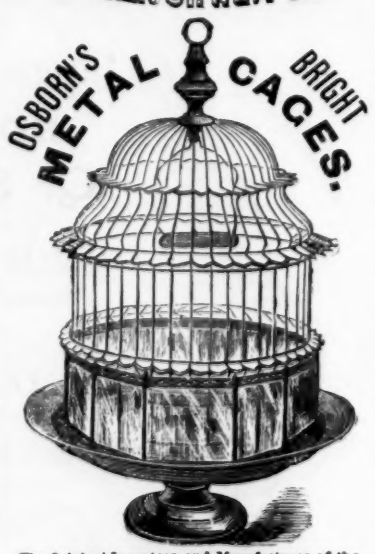

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Hints to Steam Users.*

(Concluded.)

DEPOSIT OF SEDIMENT AND INCRUSTATION AND SCALE.

These defects are among the most dangerous as well as the most expensive to which steam boilers are liable. Through their agency the water is kept from contact with the fire sheets of the boiler, and they are consequently overheated and ruined. In a former report we enlarged somewhat at length on this subject; therefore, what is said at this time must necessarily be in some measure a repetition of what has already been said. The impurities in water which are most troublesome are, lime, sodium and magnesia, mixed more or less with the salts of iron and organic matter. Sulphates are formed by the direct union of sulphuric acid with oxides, or by its action on the metals themselves. "They are sometimes formed in nature from the sulphurets by the oxygen of the air—the oxygen uniting with the metal to form an oxide, and with the sulphur to form sulphuric acid, which united make the sulphate." Lime, which is one of the primitive earths, is an oxide of the metal calcium. It is never found native or in a state of purity, but abounds in combination with acids. When in combination with sulphuric acid, as has been already stated, sulphate of lime is formed; when in combination with carbonic acid, carbonate of lime is formed. Having learned something of the nature of carbonate and sulphate of lime, they will be described so as to be recognized when met with. Chalk, limestone and marble, are among the most common forms in which chrbonate of lime is formed. It exists in the soil in a pulverived state, and when greatly abounding the soil is called calcareous. In some of the Western States it exists very extensively in the soil, and limestone is abundant in the hills and ridges and in the vicinity of the rivers. The waters are strongly impregnated with it, and it is well known that people who live in portions of the country where sandstone and granite abound are seriously affected by the use of these limestone waters. Now if this water is used in steam boilers what other result can follow than that which does, viz.: The water is rapidly evaporated into steam by heat, and the impurities—principally lime—remain behind. Water is fed into the boiler to supply the place of that evaporated, and the process goes on, until the water in the boiler, particularly near the bottom, is like sludge or slush. In this condition it is subjected to the influence of the currents in the boiler, and is finally carried to a quiet spot where it settles down upon the plates or tubes.

It is a mistake to suppose that the greatest amount of scale will be found on the crown or fire sheet because the heat, and consequently the evaporation, is greatest there. When scale is found in any quantity on the crown or fire sheets, it usually comes from the fact that portions of scale have been detached from the sides or tubes of the boiler and lodged there, and the currents have been unable to remove them. The carbonate of lime, if nearly free from other impurities, usually deposits as a loose, fine powder, forming, as has been already stated, a white slush or sludge. But when in combination with some other ingredients, and particularly with the sulphate, it forms a hard and troublesome scale. One would naturally suppose that a powder or a slush would be of little or no account in a steam boiler; but it is found to be as troublesome as an actual scale in many cases It lies along the seams, finds its way into water legs and places where there is little or no circulation, and keeps the water from contact with the iron. Hence very troublesome leaks have arisen along the joints, caused from overheating. Another trouble is this: If a boiler is blown out hot, the slush bakes on to the plates, tubes and flues, and thus is formed a hard scale. It is from such carelessness that a greater portion of hard lime scales are due. From what has been said, it will be evident that frequent blowing out—an inch or two at a time—will be of great service in removing this deposit before it becomes a hard amorphous crust. This blowing out "a little and often," should not be neglected especially where the water is from lime formations. When a boiler is blown down it should be thoroughly swept and washed out. Everything should be removed that can be. All slush or mud, and if scale has formed, such as can be knocked or chipped off, should be removed also. This will be a dirty job—but with hoe and hose the work should be thoroughly done, and the more frequently and thoroughly this work is done the less trouble will there be from incrustation and scale.

Sulphate of lime is commonly known under the names of gypsum and plaster of Paris, and as has already been stated, is formed by a combination of sulphuric acid and the oxide of calcium or lime. It is heavier than carbonate of lime and settles to the bottom of the boiler sooner, and makes a very hard and troublesome scale, difficult to remove and dangerous if allowed to remain.

Magnesia, another of the impurities in water that make trouble in boilers, is an oxide of the metal magnesium. When the carbonate of magnesia is exposed to a strong heat the carbonic acid is driven off and a light powder remains, which is calcined magnesia, or the oxide above mentioned. The carbonate deposits in the powdered state, the same as the carbonate of lime, and the two are frequently found together, forming the slush or sludge mentioned before. The oxides of iron are also troublesome in the feed water of boilers.

Silica is another impurity found in water, that mixed with those already mentioned, increases the difficulties arising from incrustation and scale. If spring water be evaporated, what remains in solid form is in part silica.

Alumina is the essential ingredient of all clays, and is present more or less in all fertile soils and in many of the slaty rocks. It is the base of common alum, and sometimes appears in beautiful forms, as the sapphire, ruby, topaz, amethyst and emerald. It would hardly be supposed that the same material in different form, which aids in causing dangerous and destructive incrustation in steam boilers, could form one of the brightest jewels in the imperial crown of Russia; nevertheless, such is the case. Other impurities are found in water, but as the quantities are comparatively small it will not be necessary to say anything about them, save, perhaps, that at certain seasons of the year, and during and following great freshets, much vegetable and organic matter is found in the ponds and streams, from which boilers are fed. It will be seen from the foregoing that the water used in steam boilers, must of necessity contain more or less mineral matter in solution or suspension from its contact with the earth's surface, or from percolating through its soil and rocks. The degree of this impurity will, of course, depend very much upon the locality, for while some localities abound in limestone formations, others are almost entirely free from it, as well as from most of the impurities mentioned above, because little or no scale will be formed. But where scale does abound, a solvent must be sought by which it can be removed. As has already been said, much can be done by way of preventive by judicious and frequent blowing out, two or three inches at a time. But when a hard indurate scale has become fastened on to the boiler sheets, other means must be employed. Care should be had in using the various solvents which are offered in the market, and by agents. Some of them are no doubt beneficial, but they should not be used simply on the recommendation of some person who is little known. Letters of recommendation are easily obtained, and in many instances the writers would be glad if they had never been given. All substances used as solvents containing acetic acid should be used with great care. For, although the acid decomposes the carbonates, forming acetates, which are kept in solution and thus prevented from forming scale, they do not affect the sulphates and therefore do not prevent scale from them, and beside the acid is very liable to attack the iron, and result in serious internal corrosion.

We have used *potatoes*, in some instances, with very good results. The starchy, gelatinous matter envelopes the precipitates and prevents their cohering. We have continued to use, in many instances, crude, unrefined, petroleum, and the results have been uniformly good. It attacks hard lime scales and removes them in due time. We would not recommend a general and indiscriminate use of petroleum, for it may do injury. It should be used under advice.

Catechu, nutgalls, oak, hemlock and other astringents containing tannic acid, have been found of service in removing scale. Tannic acid decomposes the carbonates, forming tannates, which are not soluble. It does not, however, decompose the sulphate of lime; but a scale may form from this source even when tannic acid is present. Tannic acid is liable to attack the iron of the boiler, though not to the same extent as acetic acid. One of the most successful solvents which we have used, and one which is very generally used in both this country and England, and to some extent on the Continent, is carbonate of soda, or the soda of commerce. It acts well in preventing and removing incrustation of both sulphate and carbonate of lime. The manner in which it acts upon the sulphates is easily understood. The sulphate and soda exchange their acids and sulphate of soda is the result, or the soda decomposes the sulphate of lime, resulting in sulphate of soda, which is retained in solution, and the carbonate of lime is precipitated without forming a hard scale.

It is not necessary here to enter into a detailed account of the action of these solvents, but simply to show which are effective in removing scale without doing injury to the iron of the boiler. In the last annual report issued by this company, much was said respecting the difficulty encountered by steam users from the formation of what is known as scale, deposit and incrustation in steam boilers. The extent of this difficulty depends upon the quality of water used, and as we have often stated, a solvent that works well with one kind of water, may be of no use whatever in a different locality, or with water holding different ingredients in solution or suspension. Solvents do not render water chemically pure, they simply aid in throwing down the impurities so that they can be removed from the boiler before injury is done. When solvents of scale are used, the boilers should be frequently cleaned. If an accumulation of broken scale and deposit of sediment is allowed to remain in a boiler, for any great length of time, it spreads over the fire sheets, keeps the water from protecting them, and they sooner or later become burned and ruined. Let it then be distinctly understood that if solvents are used, the boilers must be frequently cleaned. Some will require cleaning every week, others not as often, depending upon the quality of water used.

Carbonate of soda is one of the most effective substances used in preventing and removing incrustations, consisting of both carbonate of lime and sulphate of lime. It should be used in quantities varying from 1 lb. to 3 lbs. per day. It should be dissolved in two or three or more gallons of water, and if it can be introduced with the feed water, it is best to do so. If not, it may be introduced through the manhole or safety valve once in three or four days, when the steam is sufficiently low to allow it. If it is introduced at intervals of three or four days, or a week, care must be taken not to use too much at once, for if used in excess it will cause priming, and the cylinders of the engine may be injured, or the engine packing may be destroyed. The superintendent of the Soldier's Orphan Asylum, at Normal, Ill., has used the following with marked success in the boilers of that institution:

Carbonate of soda	130 parts
Catechu	70 parts

Our inspector, who has made two examinations of these boilers, reports as follows: "The first inspection that I made at the Soldier's Orphan Home, in Normal, Ill., January 30th, the boilers were found badly incrustated with a hard lime scale. My next inspection was made April 27th (during this interval the above ingredients had been used as a solvent), at which time the most of the scale had been removed without any appearance of injury to the iron."

We often have inquiries for our opinion of certain solvents, but we are reluctant to give an opinion, for, as we have already stated, a preparation that will work well in one case, may be worthless in another case. In lime scales, we believe the judicious use of carbonate of soda to be effective.

Great care should be used in selecting solvents for boiler incrustation and scale; and when they are used, if the condition of the boiler is particularly bad, blow out the boiler once a week and remove all portions of scale which may have been detached. The accumulation of loose scale on the bottom of a boiler is frequently the cause of overheating the plates, and, consequently, fractures more or less dangerous.

EXTERNAL CORROSION.

It will be apparent to all that if boilers bound up in brick-work leak at the seams, the work of corrosion will go on undiscovered unless the brick setting is removed sufficiently from time to time to see that all is in good condition. Boilers should be so set that they can be externally examined without being obliged to remove brick walls, and they can be set so that from above and underneath nearly the whole boiler can be externally examined. Another cause of external corrosion is exposure to the weather, as is often the case at mines; also leaky fittings and leaky steam or water pipes passing over the boilers. All these points should receive careful attention.

INTERNAL CORROSION.

It is not a little surprising to find sometimes in boilers some plates clean and bright, showing no indications of corrosion, while other plates will be corroded and pitted badly. This difficulty may confine itself to comparatively small spots or it may spread over nearly the whole plate. There has been much discussion as to the cause of this defect. It is undoubtedly caused by acids, but whether direct or by galvanic agencies, or both, is a question. We have seen by the foregoing that impure water contains more or less acid in various combinations. Just how they act upon the iron is not apparent. Sometimes the iron is attacked along the water line, which would seem to indicate that under some circumstances the acid was confined to the surface of the water. It is well known that iron ore even from the same mine is not always chemically the same; certain impurities will be found in some places which do not exist in others. And in the manufacture of boiler iron there is no doubt but that the sheets are chemically slightly different; hence when the boiler is constructed the presence of acids in the water may excite galvanic action. This would account for the different manner in which boilers are affected. Some are attacked at the front end, while others will be attacked at the back end, and in other cases the rivet heads will be attacked.

If it is found that the feed water is from a source that is contaminated, it should be changed at once. Ponds and streams on which cotton and woollen manufactories are located are apt to be very impure from the quantities of refuse and spent dyes emptied into them. These generally are bad sources from which to take the feed water of boilers unless it can be brought in pipes from above the factories.

INTERNAL GROOVING.

This defect is akin to the last, and arises from similar causes. In a former report it was stated that internal grooving was caused principally by a disturbance of the fiber of the iron, caused by the effort of the boiler under heat to adjust itself to certain conditions. Thus a boiler, as is well known, is made of sheets or plates with the edges lapping one over the other. It will be readily seen that no matter how well a boiler is constructed its form can only approximate to a true cylinder. Hence under internal pressure, the effort to arrive at a perfect cylindrical form brings an undue strain to bear along the inner edge of the lap, which, by being varied from time to time under different degrees of pressure, is affected very much as a piece of iron would be by bending it back and forth many times only in less degree. Now this continued variation from day to day, year in and year out, disturbs the fiber of the iron along the edge of the lap, and renders it more liable to the attack of acids in the water. It will be seen in these cases that the groove is narrow and looks as though it had been originally cut with a tool. The grooves along the girth seams are caused in a similar way. The heat on the bottom of the boiler expands it more than the other portions, and there is a tendency to cause the boiler to bend back and forth at a point or at points at right angles to its length. These points are along the edge of the inner lap of the girth seam. The fiber becomes disturbed and loosened and is consequently readily attacked by the acids in the water. Fretting of the boiler in its setting doubtless aggravates the difficulty. This defect has been attributed by some to galvanic action. One obstacle to this theory, however, would seem to be the fact that the corrosion is confined to such narrow limits.

BOILER EXPLOSIONS.

It has been our custom for a number of years to keep a list of the explosions occurring in this country and Canada for each year. These are gathered through our numerous agencies and from the newspapers. That there are many explosions where comparatively little damage is done, that we never hear of, I do not doubt; but those by which persons are killed or where the damage is large, are, I think, with few if any exceptions, collected. The aggregate for the year is as follows, viz.: 105 explosions; 183 killed; 199 wounded. The various causes of these explosions have not been easily obtained. In some cases, however, it has been settled beyond a doubt; and in all cases where an investigation has been allowed the cause has been found to be from some one of the classes of defects mentioned in this report, and the belief is that careful and thorough inspection would have diminished their frequency. The question may arise, What constitutes a careful and thorough inspection? This may be, and is, a difficult question to which to give an answer that will apply in all cases. Boilers are of such different construction that it would be impossible to do in one case what may be perfectly easy in another. The only general rule that can be given is to do the work thoroughly. Give the boiler externally, and internally, if possible, a very thorough examination. See that all the attachments are in good working condition—that the setting is right in principle and correct in workmanship.

The care of boilers has much to do with their safety and working age, and the cases of neglected boilers mentioned in this report show how important, reliable and intelligent engineering talent is. There are many who are ever ready to put forth all sorts of theories and causes of these terrible accidents. But as a general thing they are not persons who are familiar with boilers in daily use, or if they own boilers, their experience is confined to their own practice. It will be readily seen that an experience gained from examining boilers in all parts of the country, of all types and under all the varying conditions of use to which boilers are subjected, will be more valuable than any experiments with one, two or three boilers, or with the practical use of the number in any one of the large manufactories in the country. In due time our views obtained from a large collection of facts resulting from an experience of nine or ten years, will be given to the public.

* Abstract of the Annual report of Mr. J. M. Allen, President Hartford Steam Boiler Inspection and Insurance Co.

Lebanon Valley Furnaces.—Of the furnaces along the Lebanon Valley the following are in blast: Robesonia No. 2; Sheridan No. 1; Lebanon Valley, North Lebanon No. 2, and two anthracite and one charcoal furnace at Cornwall. The Bird Coleman, North Cornwall, North Lebanon No. 3, and Sheridan No. 2, are ready, or nearly so, for blast. Hon. G. D. Coleman will probably rebuild North Lebanon No. 1, and Messrs. Wm. M. Kaufman & Co. their No. 1 furnace as soon as No. 2 is started. The Union Deposit Furnace is still "cold" with but little prospect of soon being lighted. The plate mill at Lebanon will resume operations next week, A. W. Bowman having leased it from the assignees for six months. Vande Zandt's new muck bar mill at Lebanon is now shipping muck bars to Pittsburgh.

Reasons for Using our Goods.

Hogs when ringed are prevented from rooting, and fatten quickly.

Pastures and clover fields are kept smooth and are not destroyed by the hogs rooting them up.

Feed lots in the winter are kept smooth, and corn that is otherwise rooted and tramped into the ground is saved.

The **Triangular Wire Ring, manufactured only by us,** is the only wire ring that can be inserted in the hog's nose with one grip on the **Ringer,** and is the only ring that will remain in a hog's nose, as it fits close, will not turn in for the joint to irritate the nose, is not liable to be torn out, and heals quickly.

No puncturing of the nose required to insert our ring.

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SOMETHING NEW.

We shall this present season make a **Heavy Tinned Wire Ring** that will not rust in the hog's nose. The strongest and best ring in the market.

Prices.

Ringers, retail	$1 00
" per doz	6 00
Rings per box (100) coppered wire	50
" per doz boxes (1200) "	3 00
" per box (100) tinned wire	60
" per doz. boxes (1200) tinned wire	4 00
Tongs or Holders retail	1 25
" " per doz	9 00

The coppered wire ring will be sent unless otherwise ordered.

Samples by mail postpaid on receipt of retail price.

Goods sent C. O. D. with privilege of examination before paying charges.

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Our advertisements are now inserted in over 1800 newspapers, published in every State of the Union, so that dealers will find a large demand created for our goods.

THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformity of machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand or upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY,
Providence, R. I.

USE THE BEST.

Pawtucket, R. I.

The American File Company have the exclusive right to use the Bernot process for cutting files By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

Goods of all known manufacturers have been repeatedly tested, and interesting tables have been compiled showing the working qualities of files made by different makers, and of files made from different steels, and with various shapes and angles of tooth They have thus reduced the manufacture of files to an exactness and perfection with a uniformity of result, as they believe, never before attained. No file, foreign or domestic, that they have ever tested, has equalled the performances of their own goods taken at random from their stock. Their machines are capable of the most delicate adjustment, and can produce the very finest work known to the trade. Special files made to order. Prominent file manufacturers are having their best goods from our works.

Price lists and information furnished on application.

AMERICAN FILE CO., Pawtucket, R. I.

FILES AND RASPS.

XTRA QUALITY,
MADE FROM THE BEST
IMPORTED STEEL
BY THE
Auburn File Works,
AUBURN, N. Y.

JOHN ROTHERY'S Celebrated Hand-Cut FILES,

Made of Best English Cast Steel.

WALSH, COULTER & FLAGLER, Sole Agents,
83 Chambers and 65 Reade Streets, N. Y.

EDWARD PHELAN,

Surviving Partner of W. F. SHATTUCK & CO.,
No. 113 Chambers and 95 Reade Streets, New York,
MANUFACTURER OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wrenches.
Axe, Pick, Sledge & Hammer Handles.
Gimlets and Gimlet Bits.
Augers and Auger Bits.
Cocoa Nut Dippers.
Wire Seives.
Scale Beams.
Patent Tap Borers.
Brundage Horse Nails.
Maguire's Wr't Iron Goods.
Shattuck's Platform Counter Scales.
Yaw's Cow Bells.
Axes, Picks and Hatchets.

DEAN'S New Patent (1873)
Screening Scoop SHOVEL

For Coal, Coke and Coal Ashes, and other Substances.

The largest frames are 12 by 18 inches, with seven bars, and are made of the Best Malleable Iron. They are, or can be, wired between bars by an arrangement of holes a quarter of an inch apart, by an ordinary person, to screen any size substance desired. They are warranted to be the most durable and practical Screening Shovel made, or money refunded.

Reference—All New York Gas Companies and Hotels.

Smaller sizes on hand.

Please address orders to

A. SEE & SON,
N. Y. Shovel Works,
1358 Broadway, N. Y.

Price: Largest size $30 per doz., and upwards, according to size of spaces.

Clement & Hawkes Mfg. Co.,
Manufacturers of
SHOVELS,
Planters' Hoes, Trowels and Machinery.
Northampton, Mass.
Send for Circular and Price List.

Schweitzer Mfg. Co.,
57 Reade St., N. Y.
IMPORTERS & JOBBERS.

Established 1816.

Peter A. Frasse & Co.,

95 Fulton Street, New York,

SOLE AGENTS FOR

Thomas Turner & Co.'s Suffolk Works, SHEFFIELD.

FILES AND HORSE RASPS,

And Importers of

STUBS' FILES, TOOLS & STEEL,

W. J. Davies' Sons' London Emery Cloth,
HUBERT'S FRENCH EMERY PAPER.

EVERY FILE WARRANTED.
Equal to the
BEST.

Western Files.
Works, Beaver Falls, Pa.
Western Files.
Office, 96 Chambers St., N.Y.
Western Files.
Western Files.
LARGEST CAPACITY
Of any File Works in the World.

In the face of strong prejudice against American files, this brand has earned a reputation second to none. The trade in all sections testify to their excellence. We confidently offer these files as superior in every respect and cheaper than any first-class file in the market. A trial will confirm their reputation.

Backus's Patent Bit Brace

AND

Angular Extension
BORER.

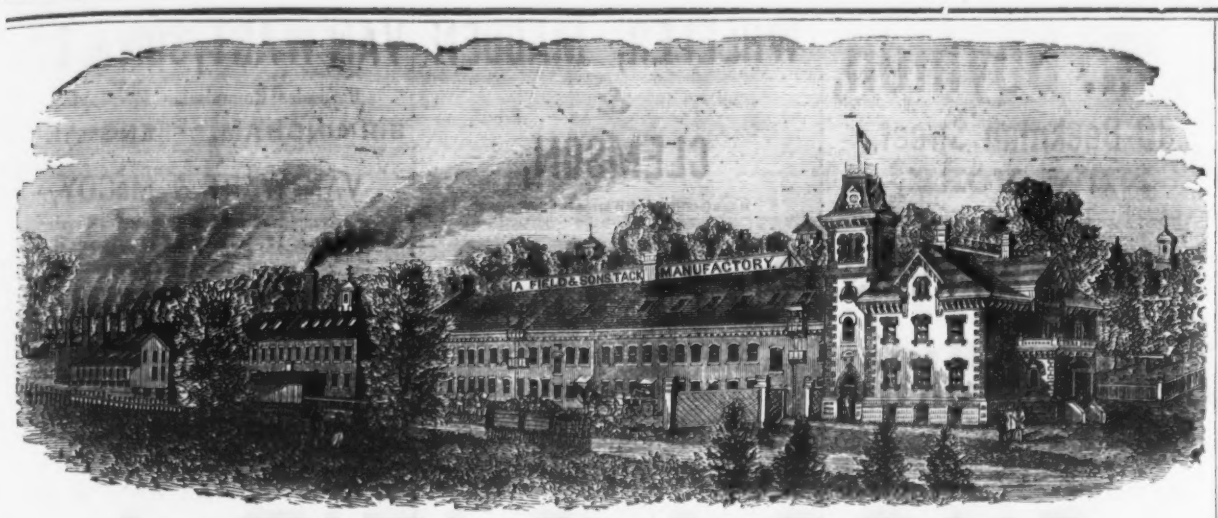
Q. S. Backus,

SOLE MANUFACTURER OF
ANGULAR EXTENSION BORER.
Salesroom, 82 Chambers St., N. Y.

This tool can be used in any brace, at any angle, and also for straight work. Is the best and most convenient tool of its kind ever offered to the public. Eight thousand sold the first year.

Also Manufactures the Straight Extension
Backus's Pat. Improved Bit Brace.

The socket is arranged so that the strain does not come on the jaws, but on the square hole which fits the shank of the bit. The jaws attached to the sleeve hold the bit firmly in the square, and center it truly. The sweep is of wrought iron. The general finish of the stock is good. Its appearance is neat. Mechanics who have used it unanimously pronounce it superior to all others; and we offer it to the trade as the strongest, most simple, and quickest operating brace in the market. We manufacture five sizes. The number of inches of sweep corresponds with the commercial number of the bit.



A. FIELD & SONS,

TAUNTON, MASS., Manufacturers of

Copper and Iron Tacks, Tinned Tacks,

SUPERIOR SWEDES IRON TACKS. for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

American and Swedes Iron Shoe Nails,

Zinc and teel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Paten' Brads, Finishing Nails Annealed Trunk and Clout Nails, Hob and Hungarian Nails,

Copper and Iron Boat Nails, Paten Copper Plated Tacks and Nails

Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks, Glaziers' Points, etc., etc.

OFFICES AND FACTORIES AT TAUNTON, MASS.

WAREHOUSE AT 35 CHAMBERS STREET, NEW YORK, where may be found a full assortment of Tacks, Brads, &c. for the accommodation of the New York Wholesale and Jobbing Trade.

☞ Any variations from the regular size or shape of the above named goods made from samples, to order.

OTIS PASSENGER —AND— FREIGHT

ELEVATORS

For HOTELS, OFFICE BUILDINGS, STORES, WAREHOUSES, FACTORIES, MINES, BLAST FURNACES, &c.

OTIS BROTHERS & CO.
SOLE MANUFACTURERS,
348 Broadway, New York.

EMPIRE PORTABLE FORGES

NO BELTS, BELLOWS OR CRANKS.
The Best Made.
Send for Catalogue to the
Empire Portable Forge Co., Troy, N. Y.

THE
CANADIAN BANK OF COMMERCE.

Capital - - $6,000,000, Gold.
Surplus - $1,800,000, Gold.

The New York Agency, 50 Wall St.,

Buys and sells Sterling Exchange, makes Cable Transfers, grants Commercial Credits, and transacts other Banking Business.

J. G. HARPER, J. H. GOADBY, } Agents.

TACKLE BLOCKS
BURR & CO
Manufacturers of Waterman and Russell
PATENT IRON STRAPPED BLOCKS
ALSO, MANUFACTURERS OF
ROPE STRAPPED BLOCKS,
81 PECK SLIP, NEW YORK

Tempered Steel Spiral Springs,

Of all sizes and descriptions, made to order by
JOHN CHATILLON & SONS, 91 & 93 Cliff St. N Y.
Our Springs are used by the U. S. Government, and various Meteorological and other Scientific Institutions.

CROCKER BROTHERS,

32 Cliff Street, N. Y.

METALS.

Anthracite Pig Irons,

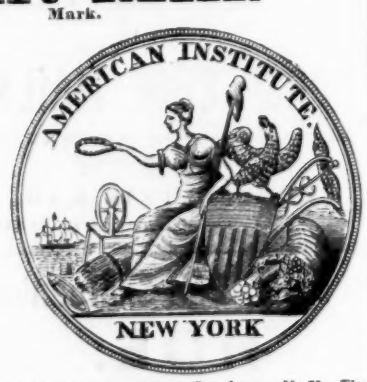
COLD AND WARM BLAST CHARCOAL IRONS,

American and English Bessemer Irons, Iron Ores.

COPPER, TIN, &c.

Advances made on Merchandise.

The "Swift Mill." Trade Mark.



— HIGHEST AWARD SILVER MEDAL at the last Fair of American Institute, N. Y. The Best ever made. More than 30 different styles and modifications suited to Grocers and others. Full catalogue on application to the manufacturers

LANE BROS., Millbrook, Dutchess Co., N. Y.

Or their General Agents, S. HAVILAND & SON, 239 Pearl St., N. Y. Also sold by the Hardware Trade.

THE CELEBRATED

YALE LOCKS

FOR ALL USES.

ORNAMENTAL

Real Bronze Hardware,

YALE LOCK MFG. CO.,

Stamford, Conn.

Salesroom, No. 298 Broadway, NEW YORK.

BUSINESS ITEMS.

PENNSYLVANIA.

Owing to a lack of coal the Emaus furnace fires were banked some weeks ago, and remained so for seven hundred hours. Fresh supplies were then received, the furnace was burdened as usual, and resumed without difficulty, moving steadily on No. 1 iron. This is, so far as we know, unparalleled in the history of blast furnace management.

The Emerson diamond-tooth circular saw, with various other kinds of saws, is now being manufactured by Emerson, Ford & Co., at Beaver Falls, Penn. The works are running eight hours a day, and employ about twenty-five hands.

Chess, Smyth & Co., Pittsburgh (tacks and nails), "flank" their puddlers by getting their iron puddled at the Cambria Iron Works, Johnstown. They ship their pig there and have it puddled under the supervision of their own foreman, so that the muck bar they get back is just the same quality as if made at their own works.

M. E. Abbott, of Bethlehem, has a machine shop and foundry which have a cupola capacity of 300 tons per month. During the busy season some seventy-five hands are employed The castings include a large variety, and, with machinery, may be enumerated partially in rolling mills, blast furnaces, pumps, slate machinery, hoisting machinery, ore washers, horse powers, drills, screw and drop presses, shafting, pulleys, steam engines, &c. Mr. Abbott makes a specialty of the complete construction of furnaces, rolling mills, &c.

The Dickson Manufacturing Company, locomotive and car builders and general machinists, have two establishments—one at Scranton and the other at Wilkesbarre. They have in their employ over 1500 hands, and the pay-roll amounts to over $50,000 per month. The works have been kept in operation not only through the present times of depression, but also through the panic of 1857.

The Beaver Falls Cutlery Works are running ten hours per day, giving employment to 310 girls, boys and men, 130 of the latter being Chinese.

The spike and rivet works of J. W. Wilson, at Allentown, has resumed operations.

Lowry, Eichelberger & Co., intend to blow out their furnace at Hopewell, Bedford county, until their stock of iron is reduced.

The car shops of Northumberland will be turned into a nail factory.

The Barree Forge Works, in Huntingdon county, will resume operations at once. Mr. Robert Speer, the manager, has already put a large force of men at work.

It is expected that extensive iron works will be established at Charlestown, W. Va., by the Dunbar Furnace Company, of Pittsburgh. The citizens of Charlestown have raised $30,000, and no doubt will secure the other $20,000, making up the $50,000 required, and the works will be erected forthwith.

MASSACHUSETTS.

The Excelsior Gas Machine Company, at Warren, shipped 2000 light machines to two Western towns last week.

The Appleton Manufacturing Company, Lowell, have started 250 looms, which had been doing nothing for ten weeks, and will employ 125 additional operatives the rest of the winter.

On the 15th ult. the Fitchburg Machine Company shipped two car-loads of machinery to Philadelphia. They also shipped on the same day to the Saxonville Mills an engine-lathe weighing 15,000 pounds, with 20 feet bed, and 50 inch swing. A car-load will be immediately shipped to St. John, N. B.

CONNECTICUT.

The Woodruff Iron Works, at Hartford, have recently received an order from New York for a 400 horse-power engine. They are now engaged upon the boilers and engines for the United States sloop-of-war Enterprise, now building at the Portsmouth Navy Yard, and upon very large engines for the Lake Superior Mining Company.

ILLINOIS.

The Quincy Plow Works consists of several buildings of an extensive nature. The main shop is 85x100 feet, three stories high; the blacksmith shop is 32x100 feet, with a wing 40x80 feet; the warehouse is 30x70 feet. The products of this establishment during the past year was 3000 plows, 500 cultivators and 500 scrapers; the sales amounted to $55,000. Some twenty-five men are employed.

Chicago will soon be able to class another manufacturing establishment among her number, the "Chicago Sheffield Steel Works" being engaged in remodelling the old works of the Globe Vise and Tool Company. They have placed one steam hammer weighing 1500 pounds in position, as well as melting furnaces, &c. The concern was incorporated in 1874.

Twenty-five different styles of hot air furnaces and hot cooking ranges are manufactured by the Quincy Stove and Furnace Company. The value of their products for 1874 was $35,000. They employ about fifteen hands and run their works continually, owing to the large demand for their furnaces and ranges.

INDIANA.

The Southwestern Car Works, at Jeffersonville, has taken a contract for 100 freight cars for the Terre Haute & Indianapolis road.

IOWA.

Watson's foundry and manufactory, at Hamburg, has been rebuilt on a much larger scale than the one burned a few months ago. Operations will commence in a few days.

OHIO.

The Buckeye Machine Shop, Akron, gives employment to about three hundred and fifty hands at the present time.

The Toledo Stove Works commenced operations in July, 1873, with a force of 21 men and a boy, and ran two heats a week, melting 1500 pounds of pig iron. Now they employ 27 men and four boys, and melt 8000 pounds of iron a day. It is intended to put in an additional furnace in the spring, and melt 10,000 pounds of iron per diem.

The Massillon Iron Bridge Company has dissolved partnership, Mr. Joseph Davenport buying the interests of Hicks Brown and O. S Jacobs.

The Sprague Sash Weight Company, of Youngstown, are running their foundry full time, and are continually in receipt of orders. Their productions are sash weights of all kinds.

The Valley Rolling Mill, at Youngstown, is running single turn on a contract for 4600 tons of rails for an Illinois road. The rails are 60 pounds to the yard, and 100 tons per day are being turned out.

MISSOURI.

The Pilot Knob Iron Works have reduced their force, and cut down the wages of those that remain.

A Light Draught Steamer.

English engineers have lately undertaken to build steamers which, if they will not "run on a heavy dew," like some of those on our Western rivers, certainly draw very little water. The London *Times* says: Messrs Yarrow & Hendley, of Poplar, have been engaged to design and construct some steamers of exceptionally light draught for the navigation of the upper waters of one of the rivers in Brazil. These boats are intended chiefly for the conveyance of passengers, and the first of them has just been launched, and made a satisfactory trial trip recently. In all probability she is the shallowest draught steamer ever built, her draught with steam up and fully equipped, being only seven inches. This formed one of the conditions imposed upon her builders. The others were that she would not draw more than nine inches of water with 20 persons on board, and that she should be of such a size as to be capable of being carried whole on a ship's deck to the Brazils. The steamer has, therefore, been built with a flat bottom, and has a length of 45 feet, and a beam of eight feet, with a depth of two feet. She is propelled by a pair of paddles 54 inches in diametes, two feet nine inches breast, and each having eight floats. Her paddles are driven by a pair of inclined direct acting engines, with cylinders five and a half inches in diameter, and ten inch stroke. She is roomy and comfortable, both fore and aft of her engines, there being accommodation for about 40 persons in all. Upon her trial trip, with 18 persons on board, she drew eight and a half inches of water. Her engines ran at an average rate of 80 revolutions per minute, which gave her a speed of about eight miles per hour. On her first contractor's trial she made the same speed with the same number of revolutions, and with 130 pounds of steam, the stated consumption of fuel being 40 pounds of coal per hour. The run made with the little craft from the Temple to Greenwich and back, was thoroughly satisfactory, and demonstrated both her speed and handiness. Now that it has been satisfactorily shown that such a light draught is perfectly practicable, it will probably follow that districts hitherto unexplored and lying up rivers previously deemed unnavigable will be opened up and new sources of commerce developed.

At the last meeting of the Academy of Sciences, M. de Lesseps made some observations on the Channel tunnel. Numerous soundings, he said, had shown that the maximum depth of the sea between Dover and Calais was only 54 meters, and that the bottom consisted of a compact and homogeneous bed of gray chalk of the estimated thickness of 250 meters. A tunnel through this chalk was quite feasible, for submarine galleries had been excavated in Cornish mines which were perfectly free from water, though protected only by five meters of calcareous matter. At each extremity a shaft would be sunk 100 meters in depth and eight metres in diameter, whence the gallery would be carried, destined to join in the middle of the Channel. To get the trains down to this level underground tunnels would be necessary on each side 10 meters in length. The submarine tunnel will be 30 kilometers long, and, as at Mont Cenis, will be ventilated only at each extremity. The arch of the tunnel will be 100 meters deep, and will be protected by a solid bed of chalk 50 meters thick. M. Du Puy-de-Lome remarked that, notwithstanding this scheme, he had not abandoned his proposal of vessels conveying railway carriages across the Channel, and that he was pressing the government for a concession which would enable him to carry it out. It was mentioned that M. Thome de Gamond, who 35 years ago first suggested a Channel tunnel, is still living in humble circumstances, his daughter supporting him by giving lessons on the piano.

In all boilers in which salt water is used the plates are attacked and the portion of the iron dissolved is ultimately found in the scale, or the mud, to which it imparts a brick-red tinge. Out of the three principal salts always present in salt water, namely chloride of sodium, chloride of calcium, and chloride of magnesium, to the former two the deleterious action mentioned is ordinarily attributed. This, however, is an error, since both salts are neither decomposed or altered at the highest temperatures, and hence they cannot be caused to affect the iron through the heat in the generator. The chloride of magnesium, however, a writer in the *Annales de l'Industrie* points out, decomposes into hydrochloric acid and magnesia. The former in contact with the iron attacks it, forming chloride of iron, which is soluble in water. When the chloride of magnesium is deposited by the salt water on the portions of the boiler, this result takes place; and the chloride of iron, dissolving in combination with the carbonate of lime already in solution, forms chloride of calcium and red oxide of iron, which is found in the scale. It remains, therefore, to find a means of combating this action of chloride of magnesium, in order to preserve marine and other boilers in which sea water is used.

GEORGE GUEUTAL & SON,

39 West 4th St., New York.

IMPORTER OF

Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c.

Bed Screws, Pin Hinges, and Wire Nails a Specialty.

H. W. PEACE,

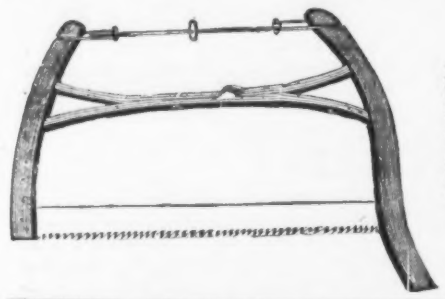
MANUFACTURER OF

Saws of all kinds.

FACTORY, WILLIAMSBURGH, N. Y.

Elliptic Forked Saw Frame.

Patented June 28th, 1870.



The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,

Sole Proprietor & Manufacturer,

VULCAN SAW WORKS.

WILLIAMSBURGH, N. Y.

THE SILVER STEEL
DIAMOND CROSS-CUT SAW.

$1.50 Per Foot.

Patent Secured

PATENT HANDLES AND GAUGE INCLUDED.

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of **SPEED AND EASE**, is manufactured by **E. C. ATKINS & CO., Indianapolis, Ind.**, who are the

SOLE MANUFACTURERS FOR THE UNITED STATES.

So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled.

E. C. ATKINS. H. KNIPPENBERG.

E. C. ATKINS & CO.

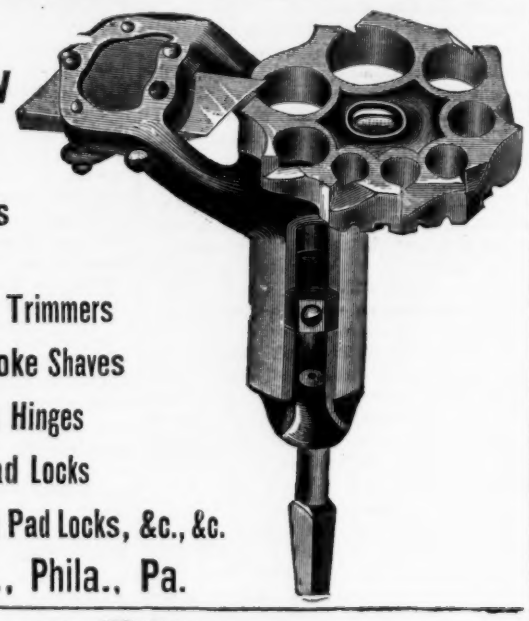
Saw Manufacturers and Repairers, Indianapolis, Ind.

Lloyd, Supplee & Walton,

HARDWARE FACTORS.

MANUFACTURERS OF

Bonney's Hollow AUGERS.



Stearn's Hollow Augers

and Saw Vises

Bonney's Spoke Trimmers

Double Edge Spoke Shaves

Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.

QUACKENBUSH, TOWNSEND & CO.,

IMPORTERS AND WHOLESALE DEALERS IN

HARDWARE, CUTLERY, &C.,

59 and 61 Reade Street, N. Y.

DEPOT FOR

THOMAS JOWITT & SONS,

(Sheffield, England,)

Celebrated FILES AND HORSE RASPS.

Rough and Ready and

CLIPPER SCYTHES,

Warranted.

THOS. JOWITT & SON TESTED CORPORATE MARK

"BEAVER"

(American)

FILES AND HORSE RASPS

"WIDE AWAKE"

AXES.

[atented] And Exclusive Manufacturers of the [March 4, 1873

CHALLENGE DOOR & GATE SPRING.

PATENTED JULY 11TH 1871.

CHALLENGE DOOR & GATE SPRING.

PATENTED JULY 11TH 1871.

McKINNEY MFG. CO., Hamilton, O.

Wrought Butts, Strap & T Hinges.

Send for special discount sheets.

JOHN I. BROWER & SON,

Hardware Merchants,

288 Greenwich Street, NEW YORK.

HORSE SHOES.	HORSE NAILS.	HORSE RASPS,
Burden's,	Putnam's,	Thos. Turner & Co.'s, Sheffield, Eng.
Perkins',	Globe	TOE CALKS,
Snow,	Vulcan,	Winsted.
Rhode Island,	Ausable,	HAY RAKES,
Goodenough,	Ausable Pointed & Polished,	Breakenridge's.
Shoenberger.	Ausable Pointed & Blued.	

E. M. Boynton,

80 Beekman Street,

NEW YORK,

Manufacturer of

Saws of all kinds.

Also Sole Manufacturer of

LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.

Note extra steel and durability over the old **V**, outlined on **M** tooth.

Telegram Dated Oct. 1st, 1874.

STATE FAIR, EASTON, PA.

TO HENRY DISSTON & SONS:

Philadelphia, Pa.

I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diameter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, he having lately made large shipments of his saws to Australia and other distant markets.—*The Iron Age*, Oct. 8, 1874.

For fuller report of this exhibition see the *Easton Morning Dispatch* of Oct. 1st, 1874.

Henry Disston & Sons cannot furnish Lightning Saws. Why do they imitate mine?

J. FLINT,

Manufacturer of

ALL KINDS OF

SAWS

And Plastering Trowels,

ROCHESTER, N. Y.

A large Stock of **Cross Cut Saws** constantly on hand. Orders filled promptly. **Dietrich's Double Handle One Man Cross Cut Saw** made with any kind of tooth desired. Our patent method of grinding Hand Saws makes them superior to any in the market. Send for Illustrated Price List.

Putnam's Government Standard

FORGED

HORSE SHOE NAILS.

Manufactured from the best of **NORWAY** Iron, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,

NEPONSET, MASS.

Rogers' Self-Sharpening HOE.

The best Hoe in market. It will not batter or break. Wears itself sharp. Will last twice as long as any other Hoe, and is warranted to cut the "Bolles Hoe" or any Hoe in market.

For Sale at Manufacturers' Prices by

RUSSELL & ERWIN MFG. CO., - - New York.
BYRNE & FITZSIMONS, - - - - Albany, N. Y.
KENNEDY, SPAULDING & CO., - - Syracuse, N. Y.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.,

303 Walnut St.,

PHILADELPHIA

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves, and firms connected with us, viz.

A. Pardee & Co.	HAZLETON, CRANBERRY, SUGAR LOAF
G. B. Markle & Co.	JEDDO, HIGHLAND.
Pardee, Bro. & Co.	LATTIMER

OFFICES:

WM. LILLY, Mauch Chunk, Pa.
WM. MERSHON, Agent, 111 Broadway N.Y
WM. H. DAVIS, Agent. Easton, Pa

WHEELER, MADDEN & CLEMSON,

Manufacturers of Warranted Cast Steel

SAWS

of every description, including

Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws,

&c., &c

Cast Steel Files

of the well known brand of

Wheeler, Madden & Clemson.

FACTORIES:

Middletown, Orange Co., N. Y.

BRANCH OFFICE:

97 Chambers Street, New York.

BRUNDAGE FORGED HORSE NAILS,

Manufactured from

BEST NORWAY IRON,

by BRUNDAGE & CO. Sold by

WHEELER, MADDEN & CLEMSON

Middletown, Orange Co., N. Y.

I make a specialty of the LARGEST SIZES of **Circular Saws**, and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted *over twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

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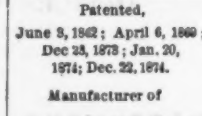

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which must supersede all others. It has the endorsement of Mr. Bergh, and is one of the best and most humane inventions of the age.

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PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Feb. 15, 1875.

Notwithstanding the continued severity of the weather, which interferes with business to a great extent, we are tolerably busy in this city, and trade is slightly improving every day. The reduced prices of labor and material are having their effect upon enterprise, and many of our railroad companies are taking advantage of them to refit and restock their roads. The Lehigh Valley Railroad Company at the Packerton shops, are building 6000 new coal cars, at the rate of near a hundred per week, and thus give steady employment to one thousand men. The Pennsylvania Railroad Company is also receiving numbers of new platform, house and coal cars, from the Car Trust Company—if this be the correct title of the association formed early in the winter to build and rent cars to this railroad. This company appears to fully appreciate the great demand which the Centennial Exhibition will make upon its passenger and freight traffic, and is making extensive preparations, not only on the line of the road, but at the termini, especially at this city. It is proposed to construct near the main entrance to the Centennial grounds, to which the track of the company is already laid, a grand depot covering a very considerable area, and capable of accommodating under roof some 14,000 persons. The branch track is to be spanned by a wide bridge, to serve as a promenade, and from which steps will descend into the depot. A mammoth hotel is also proposed by the company at the same spot, capable of being taken down after the Exhibition and used for cottages. Col. Scott reports his intention of greatly increasing the rolling stock of the road before the Exhibition, and in view of the necessity of rapid transit between Philadelphia and New York, the company is building new and heavier locomotives to be run at a greatly increased speed. The track will be thoroughly relaid, and special trains with extra accommodations will make the distance between the two cities in about half the present schedule time. Test runs were recently made, and the speed at the time noted in this correspondence, but these only demonstrated that more powerful locomotives were required to accomplish the desired rate of speed. Such are now being designed and constructed in the company's shops. Relative to preparations for moving goods intended for the Exhibition, the company is constructing sidings along the entire line between Philadelphia and New York, and will be able to meet every demand made upon it for freight or passenger traffic.

The demand for space at the exhibition is becoming so great that additional buildings for specialties will be constructed, and it is quite possible that in addition to the memorial building, the exhibition building itself, or machinery hall, will be allowed to remain, and may be purchased after the celebration by the Franklin Institute and retained for annual expositions. The introduction to the first report of the second geological survey of Pennsylvania, under Prof. Lesley, has been submitted to the Governor, and, in addition to the promise of valuable information in the report, wisely recommends that the collection of fossils and minerals intended for the State museum, at Harrisburgh, should be exhibited at the Centennial, which might well remain permanently in the memorial building. He also argues strongly the appointment of a superintendent for the exhibition of the iron industry of Pennsylvania, who should be a practical metallurgist of executive ability. This matter deserves the attention of Pennsylvania iron men at once, and no better step toward it could be taken than to organize an association of strictly Pennsylvania iron manufacturers, of all branches, for this purpose only. In a patriotic point of view, it is highly desirable, and as a commercial matter, it would refund any cost incurred many hundred fold. The National Monument Association, for a monument commemorative of the period, to be erected in Independence Square is progressing finely. Subscriptions are to be limited to $1 each, and the expense, including some 25 figures of statuary, is estimated at $250,000. A matter which the iron trade is interested in, and which deserves their attention, is the memorial of John Roach, of the Delaware River Iron Ship Yard, to Congress, protesting against the repeal of the Pacific Mail subsidy. Just now, from the Irwin investigation, Pacific Mail is in bad odor, but nothing has been shown to prove that the subsidy was obtained by the bribery of members. It's repeal would practically be a great injury to iron ship building, and would result in direct damage to the iron trade. The subsidy has given us the Peking and Tokio, and will develop the construction of other ships. As it seems practically impossible to get national appropriations for any purpose without some of the money "falling by the wayside," it is certainly unfortunate that the first ever made to directly develop any branch of our domestic iron industry should come under a ban in its inception. Iron ship work progresses, however, steadily. Holmes, Shaw, Browne & Co. have an order for a second new iron vessel, and Dialogue & Wood are building an iron ferry-boat of great strength for wintry ice service. The Juniata, of the Southern Mail line, now in port, was in collision at the mouth of the bay, and shows the force of the blow by a sharp indentation in her starboard quarter plating, but sustained no serious damage. This is in opposition to the theory that rivets in iron ship plates, under sudden impact, will break short off for a considerable distance from the blow—a theory lately advanced abroad by Capt. Palisser, of the Royal Navy. Another iron ship, the Mary, of the Clydes Line, came to grief this week, having struck on the breakwater and sunk. She was built by the Cramps in April, 1873, with engines by Neafie & Levy, and is a purely Philadelphia ship, and fitted with more than usual elegance. She will possibly be raised and saved. The Industrial School Bill is meeting with favor in the Legislature, and we have a prospect of soon having an opportunity afforded our youth of free technical education, for which the strongest necessity has long existed. The quarrelsome puddlers of Hughes & Patterson Mill have been making themselves obnoxious to the proprietors and workmen engaged, and some rioting has occurred. This is not an union strike, but a quarrel as to the employment of a night foreman in running a scrapping furnace. The man who runs a rolling mill for 10 years in this world deserves a special rest in the next, for little peace is obtained here in that business. Pig Iron moves actively, and Bars and Rails are steadily improving in price.

Good Mechanics Wanted.

The *Scientific American* offers the following encouragement to young men learning the mechanical trades:

This country is almost over-stocked with professional men; and whenever education and ability are united in a young man, he is almost sure to quit the practical part of his trade, and become a consulting engineer and an expert, living by fees instead of by wages, and selling his knowledge and not his skill. Thus, men of brains are taken out of the working class; and many manufacturers look in vain, in the rank and file of their establishments, for men capable of being master mechanics. The question as to where our leaders and foremen are to come from is deserving of our best consideration; for there are many other influences at work which are retarding the progress of the American working man. Boys and young men should especially bear in mind the value of acquiring a thorough knowledge of all branches of the trade by which they intend to earn their bread, so as to become capable leaders and instructors of others, less gifted and fortunate than themselves. The gentleman above referred to recently needed a first class machinist to superintend a certain branch of business, the specialties of which would require a few months of attentive study and practice. It is difficult to believe that the rules of a trade society, ostensibly organized for the protection of the rights of working men, prevented a skilled artizan from leaving an inferior position to be a superintendent; but it is nevertheless a fact. He stated that the union to which he belonged would not allow him to work for an hour at less than a certain rate, even though his temporary reduction would certainly lead him to permanent employment of great responsibility and credit, and consequently large remuneration. The employer, naturally averse to having his liberal offer thus treated, at once declined to promote the man on any terms whatever, as no one who would thus debar himself from getting on in the world was fit to be put over others, who would naturally follow his example and imbibe his ideas.

So many qualifications are wanted in a manager and superintendent of a machine business that fitness for the post is rare, and the ambition to fill it creditably ought to stimulate our workmen to study and improvement.

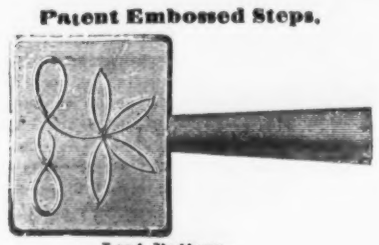
On the Discharge of Gases and Vapors from the Openings in Vessels.—Zeuner and Flieger have recently published the results of their labors on this interesting and practical question. The results obtained show that the quantity discharged with a definite pressure in the vessel, increases with the difference between the inner and outer pressure, but only up to a certain limit. This limit for gases and almost pure vapors is reached when the outer pressure is about half as great as the inner. A farther decrease of the external pressure increases the exit velocity, but at the same time it also increases the specific volume in the cross section of the out flow, and in such a way that the quantity flowing out is the same for all lower pressures as for that at the limit. For vapors which are mixed with condensed liquids the limit is higher. Experimental data are as yet wanting for an exact determination of the limit for this case where the fluid comes out more in a liquid than a gaseous state. Hence the quantity of heated water that flows out of the water space in a steam boiler cannot be calculated. Director Krauss states that if a hole be made into the water space of a steam boiler, the boiler will be emptied sooner when cold than warm, and thus explains this phenomenon. The pressure is reduced at the opening, and steam is formed which retards the outflow. Prof. Linde remarks, on the contrary, that the fact that more cold water will escape than warm water, is certainly correct, under the hypothesis that the extra pressure is alike in both cases, but, also, under corresponding circumstances, the quantity of cold water discharged at a lower pressure might be greater than that of hot water discharged at a higher pressure.

Buried Knowledge.—It is impossible to foresee to what extent scientists of our time will resurrect the buried knowledge of the past. The bricks of Nineveh, stamped with unknown letters in an unknown language, have been deciphered and translated; the existence and manners of the men who lived contemporaneously with the elephant and rhinoceros in Europe have been inferred from fragments of bone and stone; the domestic religion of the early Greeks has been explained for the first time after a lapse of 2500 years; and now we are about to have a translation of a comprehensive treatise on medicine, as understood and practiced in the valley of the Nile 3400 years since. A large papyrus, written in hieroglyphics and in excellent preservation, found in a pyramid, has been translated in Europe, and is now being printed by steam to satisfy the doctors that their learning and their ignorance do not date from yesterday.

From the *Revue Industrielle* we learn that there are in France 123,000 manufacturing establishments, using a steam power of 500,000 horse-power, and giving employment to about 800,000 hands. The department of the Seine ranks first in point of productiveness, with (in round numbers) a manufacturing total of £67,600,000, or one-fifth of the whole. The department of the Nord, which ranks next, has a total of £28,000,000; the department of the Rhone, £24,000,000; that of the Seine Inferieur, £16,000,000; next comes the department of the Bouches du Rhone, with £10,840,000. The last departments enumerated are those of Correze and Cantal, with totals of £220,000 and £140,000 respectively. These statistical inquiries have been just concluded, and were instituted by the French Minister of Commerce.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Patent Embossed Steps.

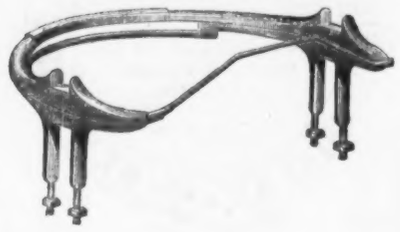


Leaf Pattern.

King Bolt Yokes.

Established 1850.

No. 6 Fifth Wheels.



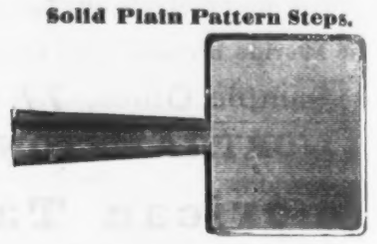
1871 Pattern Shaft Couplings.

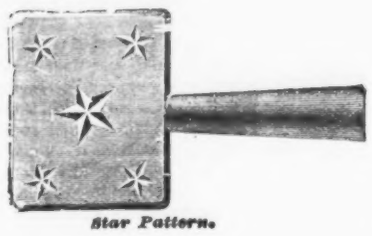
Patent Cross Bar Steps.

Upper View.

Lower View.

Solid Plain Pattern Steps.





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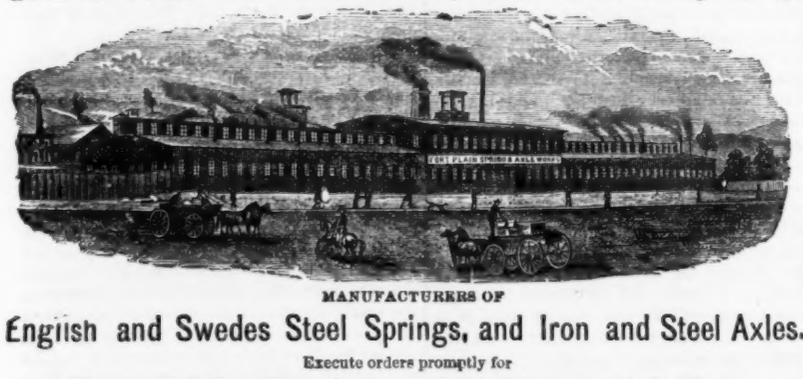

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Jur facilities for manufacturing are very extensive, and with our recent additions of new and improved hinery, we defy competition.

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Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not urn in its place.

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Carriage and Tire Bolts,

NORWAY IRON,

Button Head.

QUALITY GUARANTEED.

Trade Mark.

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Carriage and Tire Bolts,

CHARCOAL IRON,

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QUALITY UNSURPASSED.

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Our I X L Bolt is made from approved brands of Iron, and is equal in every point of appearance to the regular Philadelphia Carriage Bolts, being made on the same machinery, and the quality is not surpassedby any bolt of like grade in the market.

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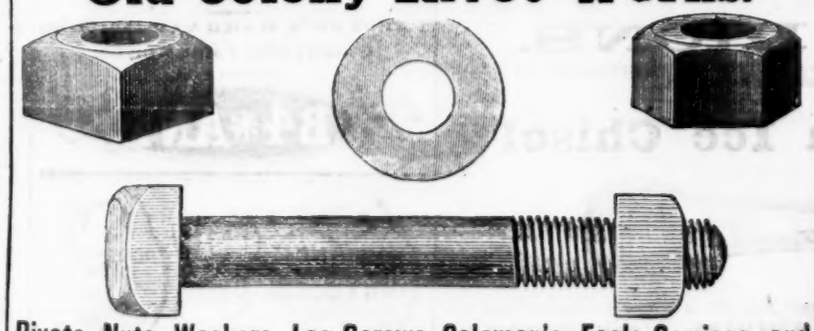
Old Colony Rivet Works.



Rivets, Nuts, Washers, Lag Screws, Coleman's Eagle Carriage and Tire Bolts, Axle Clips, Felloe Plates, Shaft Couplings, Stove and Machine Bolts, Driling Machines, Tire Benders,

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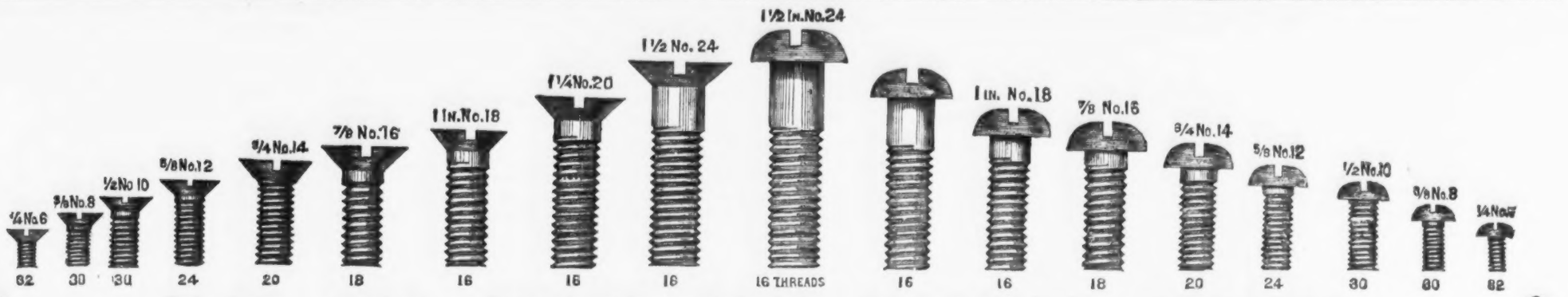

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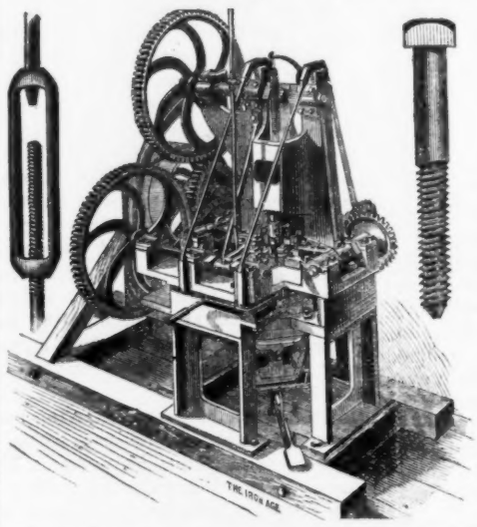

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The Iron Age.

New York, Thursday, February 18, 1875.

DAVID WILLIAMS - *Publisher and Proprietor.*

JAMES C. BAYLES - *Editor.*

JOHN S. KING - - *Business Manager.*

NEW YORK, January 2, 1875.

Until the 1st instant the postage on newspapers was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 24 cents.

Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 30 cents; Monthly, 15 cents.

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City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

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The Iron Trade and Transportation.

At the meeting of the American Iron and Steel Association, on Thursday last, Mr. Z. S. Durfee, secretary of the Pneumatic Steel Association, read a paper of great interest and value, on the relations of transportation to the iron trade, which we should be glad to make room, for in our columns, were it not of inconvenient length. As the subject is one of much importance, however, we will devote a portion of our editorial space to a presentation of the facts stated, and the conclusions reached by Mr. Durfee, believing that they are entitled to the attention of all classes of our readers.

Mr. Durfee starts with the assumption that the capacity of the iron and steel works of the United States is, in round numbers, 4,500,000 tons of pig iron, 1,250,000 tons of iron and steel rails, 1,200,000 tons of merchant bars, plates, blooms, etc., and 50,000 tons of tool, sheet and other miscellaneous steels. By far the larger proportion of the demand for these products comes from the railroads of the country, and hence the present stagnation in railroad building exerts a very depressing effect on the iron and steel trades.

Every railroad of the usual gauge built to do a considerable traffic, uses 100 tons of rails per mile of track; and the incidental demand created by such constructions for fastenings of tracks, for bridges, viaducts, station and engine houses, and rolling stock, is probably not less than 50 tons, or, say all told, 150 tons per mile.

The average wear and tear of rails on the railroads of the country, allowing for the steel rails now down, is about eight tons to the mile; and the mileage being now over 70,000, the annual replacement of rails should be 560,000 tons. Allow ten per cent. of this for the further demand for iron other than rails, and we will have 616,000 tons as the annual demand of existing roads for manufactured iron. This will leave from our annual capacity for rails and bars of all kinds, which is 2,500,000 tons, 1,980,000 tons which will have to be worked up for new railroads or otherwise, if our works are kept employed. Assuming that the average demand for miscellaneous uses will absorb 1,000,000 tons of this, for the sale of the balance, 980,000 tons, iron and steel makers must depend upon new railroads. At 150 tons per mile, this balance would only be absorbed by the building of 6560 miles of railroad per year; and the problem is whether there will be a demand for that number and the money can be raised to build them.

During the past ten years we built an average of 3700 miles per year, the largest number in any year being 7779 miles—and our difficulty is not that too many miles were built, but that they were built in the wrong places, and many of them dishonestly; that, instead of facilitating rapidly and immediately the production of wealth, they were merely absorbents of capital. Had half the miles of railroads built west of the Mississippi been built east of it, to lessen the cost of transportation on the raw materials of our manufactures, instead of being a drain upon our resources, they would have developed our almost inexhaustible mineral wealth and helped so to cheapen the cost of our iron, steel, timber, and other material used in construction, that the railroads yet to be built could be built much more cheaply than they now can be.

If we take the capacity of our blast furnaces to be 4,500,000 tons of pig iron per year, with the average richness of the ores used over the whole country, the quantity required to make the iron will be 10,000,000 tons at least. The cost of these ores to our furnaces varies from merely the cost of digging and handling at some isolated charcoal furnaces, to $12 per ton for the richest ores used in some of our Pennsylvania furnaces; and the average cost of all the ores now worked by our furnaces throughout the country is not probably less than $6·50 per ton at the furnaces. By far the greater part of this cost is in transportation and profit, and by a judicious laying out and building of mineral roads, the cost of these ores to the average of our furnaces can be reduced over $1 per ton. A reduction of $1 per ton would be a saving to pig iron makers of $10,000,000 annually, and if only one-half of this were realized by the manufacturers and the other half left for profit on the new facilities for carriage, this half would represent a ten per cent. dividend on $50,000,000 invested capital. Now, a sufficiently good freight and passenger railroad for trains running at moderate speeds can be built on the ordinary gauge for $30,000 to $40,000 per mile, and the $50,000,000 aforesaid would build from 1200 to 1500 miles of such road, and twice that number of merely mineral roads. The cost of mining and delivering on cars the average of ores being not in excess of $1·50 per ton, if we allow $1·50 per ton for profit, which is certainly large enough, we will have left, on our average cost of $6·50 per ton at furnace, $3·50 for transportation.

Some of our mineral traffic in the West is now done at one cent per ton per mile, and that is a fair paying rate for carrying such freight at slow speeds in large quantities and on long distances; but the average rate paid throughout the country is probably more than double the above. Three dollars and a half per ton would, at the lowest rate, allow for a transportation on each ton of ore of 350 miles; but as the poorer ores, which will bear the least transportation, are very widely spread over the country, and exist in large quantities near nearly every iron making region, we could safely allow 500 miles on our richest ores as against the shorter distances for the commoner and leaner, and still keep within the general average of present cost.

With what is now well known of the magnitude and richness of the deposits of iron ores in Virginia, North Carolina, Alabama, Missouri and Michigan, and of the newly opened mines in Northern New York, it must be clear that half the money which might be saved, if invested in mineral roads, or partly in mineral and partly in ordinary railroads, would much more than effect the saving in cost of ore alluded to above, and yet be remunerative to the builders and managers. Railroads laid out specially for carrying ores would shorten the transportation very much, and some might be built which would reduce greatly the exorbitant charges of existing roads which have now no competition in this traffic.

Applying this investigation to the fuel and fluxes used in making the pig iron, we will find that, taking the average of all the furnaces of the country—anthracite, bituminous and charcoal—the quantity of fuel used per ton of pig iron made will not fall short of 2¼ tons, or, for the 4,500,000 tons capacity of our furnaces, 10,125,000 tons of coal. The average cost of fuel per ton is not so high as that of ore, but it will not fall far short of $4 per ton the whole country over. It will scarcely be possible to cheapen the cost of the fuel by increased facilities for transportation to the same extent as the cost of ore, but it will be conceded that an average saving of 50 cents per ton will be possible. This saving would amount to $5,062,500 annually, one-half of which as an annual return would warrant the building of 700 miles of new road on the basis stated above. As to fluxes, the quantity required is very large, being for 4,500,000 tons of pig iron at least 3,000,000 tons, but the amount of transportation on it is much less than on either coal or ore. Taking, however, the transportation growing out of the ores, coals, fluxes, and the various materials involved in repairs of the furnaces producing 4,500,000 tons of pig iron, and the further transportation of the iron produced to market, we will have a gross transportation due to the business of 27,625,000 tons.

Continuing the investigation to the manufacture of the pig iron into bars, castings, etc., we get the following results: The capacity of iron and steel rail mills is now about 1,250,000 tons; the capacity of our bar mills, plate mills, bloomaries and steel works making tool and miscellaneous steel, is about the same, 1,250,000 tons; the coal required per ton of finished bars of average shape and quality is not less than two tons, say for the 2,500,000 tons 5,000,000 tons; and the ores for fettling in the puddling process, the fire brick, sand, clay, and other material for repairs, must amount to quite 500,000 tons; in all, 8,000,000 tons.

The 2,500,000 tons of bars, rails, etc., above stated as the capacity of our mills, allowing for the waste of pig iron in transformation, will use at least 3,000,000 tons of the pig iron produced, thus leaving to be used in manufacture of castings for machinery, buildings, bridges, stoves, etc., 1,500,000 tons. This, with the average waste of metal in cupola and furnace melting, will make of merchantable castings about 1,425,000 tons; the coal to melt this iron will amount to at least 200,000 tons; and the sand and bricks used for repairs of the furnaces and for molding, etc., will amount to 50,000 tons; making a total of 1,675,000 tons.

The totals of freight thus shown as arising out of our iron manufacture will, on recapitulation, be as follows:

FROM PIG IRON.

	Tons.
Ore	10,000,000
Coal	10,125,000
Fluxes, etc.	3,000,000
Product	4,500,000
Total	27,625,000

FROM MANUFACTURED IRON.

	Tons.
Rails	1,250,000
Bars, plates, etc., iron and steel	1,250,000
Coal for manufacture	5,000,000
Fettling ores, bricks, clay, etc., for repairs.	500,000
Total	8,000,000

FROM CASTINGS OF ALL KINDS.

	Tons.
Weight of castings produced	1,425,000
Coal for manufacture	200,000
Materials for molding and repairs	50,000
Total	1,675,000

	Tons.
Grand total of all these amounts	37,300,000

These estimates of the transportation which must grow out of the full employment of our iron and steel works will surprise all who have not given the subject considerable attention, and they will perhaps be more surprising when contrasted with some of the statistics of our railroads and with those of the agriculture of the country and of transportation developed by that great industry. The estimated total of agricultural products in 1873 was 76,059,195 tons. Of this fully two-fifths were consumed where they were raised. The three-fifths left for freight was 45,635,517 tons, or less than one-fourth more than the amount of freight transported on account of iron manufacture. The exports of agricultural products for the fiscal year ended June 30, 1874, amounted to 4,962,315 tons, or less than one-fifteenth the amount produced, and less than one-seventh the weight of material which must be handled to keep our iron and steel trades fully employed. These facts show the folly of investing so large a part of the annual additions to the national wealth in railroads for the transportation of farm produce, and so small a part in railways for the transportation of supplies for our iron and steel industries. If our iron and steel works were run to their full capacity, they would employ 10,000 miles of railroad on their own business, and the saving on the cost of raw materials and transportation thus effected, according to Mr. Durfee's calculations, would pay an annual interest of ten per cent. on 7000 miles of railway costing $35,000 per mile.

These are facts and figures which should arrest the attention of iron masters and capitalists. If the experience taught to both iron and steel makers, and the great users of these products, the railroad builders, by the events of the last ten years, should be properly applied to the development of our vast mineral and agricultural resources this side of the Mississippi, we could soon go on building railroads and rail mills to an almost indefinite extent, and compete with our manufactured products in all the markets of the world. There are no two elements on which the prosperity of a country so much depends as upon the cost of transportation and the cost of the kings of all the metals, iron and steel. Without the latter no large development of agriculture or manufactures is possible, and the measure of their use is the true standard of civilization.

On another page of this issue will be found a report of the annual meeting of the American Iron and Steel Association on Thursday last, in Philadelphia. The business before the meeting was not important and, owing to the severe cold, the attendance from distant parts of the country was not large. The next annual meeting of the Association will be held in one of the Southwestern cities. This is a wise determination. The more a national Association can be delocalized, the greater its influence and its oppportunities for usefulness.

American Inventions and Patents.

The annual report of the Commissioner of Patents for the year ended December 31, 1874, a copy of which comes to us in this week's issue of the *Official Gazette* of the Patent Office, contains some interesting statistics. The following is a statement of the business of the Patent Office for the year 1874:

No. of applications for patents during 1874	21,602
No. of patents issued, including reissues and designs	13,599
No. of applications for extension	216
No. of patents extended	199
No. of caveats filed during the year	3,181
No. of patents expired during the year	4,908
No. of patents allowed, but not issued for want of final fee	2,861
No. of applications for registering of trade marks	648
No. of trade marks registered	359
No. of applications for registering of labels	221
No. of labels registered	151

Of the patents granted they were to:

Citizens of the United States	13,073
Subjects of Great Britain	352
Subjects of France	74
Subjects of other foreign governments	101

As showing the distribution of the inventive talent of our people, we have the following table, giving the proportion of patents granted to the total population of the several States and Territories:

States, &c.	No. of Patents.	One to every
Alabama	39	25,564
Arkansas	14	3,465
California	301	1,861
Colorado Territory	29	1,812
Connecticut	668	804
Dakota Territory	4	3,543
Delaware	39	3,305
District of Columbia	145	901
Florida	12	15,645
Georgia	69	17,161
Illinois	944	2,478
Indiana	455	4,762
Iowa	312	3,606
Kansas	74	4,994
Kentucky	135	10,568
Louisiana	76	9,550
Maine	151	4,151
Maryland	218	3,578
Massachusetts	1,506	966
Michigan	380	3,116
Minnesota	110	3,997
Mississipi	56	14,784
Missouri	306	5,625
Montana Territory	1	20,595
Nebraska	29	4,341
Nevada	16	2,685
New Hampshire	127	2,506
New Jersey	616	1,471
New York	2,785	1,531
North Carolina	47	11,811
Ohio	938	2,972
Oregon	30	3,031
Pennsylvania	1,644	2,142
Rhode Island	104	1,328
South Carolina	42	16,900
Tennessee	89	14,027
Texas	113	7,244
Utah Territory	9	6,642
Vermont	126	3,625
Virginia	71	17,755
Washington Territory	4	8,926
West Virginia	38	11,633
Wisconsin	255	4,196
Wyoming Territory	4	2,979
Great Britain	352	....
France	74	....
Other countries	101	....
United States Army	7	....
United States Navy	1	....
United States in general	....	2,986

The following presents, in the form most convenient for reference and comparison, a record of the business of the Patent Office from 1837 to 1874, inclusive:

Year.	Applications.	Caveats filed.	Patents issued.
1837	....	....	435
1838	....	....	520
1839	....	....	425
1840	765	228	473
1841	847	312	495
1842	761	391	517
1843	819	315	531
1844	1,045	380	502
1845	1,246	452	502
1846	1,272	448	619
1847	1,531	553	572
1848	1,628	607	660
1849	1,955	595	1,170
1850	2,193	602	995
1851	2,258	760	860
1852	2,689	996	1,020
1853	2,673	961	978
1854	3,324	868	1,902
1855	4,435	906	2,024
1856	4,960	1,024	2,502
1857	4,771	1,010	2,910
1858	5,364	934	3,710
1859	6,225	1,097	4,598
1860	7,653	1,084	4,819
1861	4,643	700	3,340
1862	5,088	824	3,521
1863	6,014	787	4,170
1864	6,932	1,063	5,020
1865	10,664	1,937	6,616
1866	15,269	2,723	9,450
1867	21,276	3,597	13,015
1868	20,420	3,705	12,378
1869	19,271	3,624	13,986
1870	19,171	3,278	13,351
1871	19,472	3,366	13,053
1872	12,246	3,090	13,500
1873	20,414	3,248	12,864
1874	21,602	3,181	13,599

The business of the office for the past year presents several interesting features. The number of applications received was greater than in any previous year, and a larger number of patents were issued than in any year with the exception of 1869. It would be interesting to know how many of the 13,599 patents granted are of any value. Probably the number of those which will return the inventors an amount equal to the cost of securing them, will be very small—perhaps not more than one in a hundred. A much larger proportion of them will ruin the inventors by absorbing the savings of years of industry and frugality, and a good many will ultimately prove profitable to those who buy them from the inventors for a price which would not amount to apprentice's wages for the time spent in elaborating the ideas and reducing them to a practical application. The records of the patent office might be called a register of disappointed hopes, were it not for the few bright exceptions which stimulate inventive talent by holding out alluring promises of easy fortunes. Fortunately for the community, the few successes encourage vastly more than the many failures discourage, and the net result of all the time and energy expended in inventing and improving is of incalculable value in promoting the progress of civilization. The trouble with inventors as a class is that they begin to work at the wrong end. Those who waste their time and money are mostly those who get an idea and struggle to find an application for it; those who succeed are mostly those who devote their energies to the creation of something which shall meet an existing want. If inventors would devote a larger share of their attention to finding out what is needed, they would oftener find a market for their patents or for the articles manufactured under them.

The Stove Manufacturers' Convention.

We print on another page of this issue a report of the proceedings of the annual meeting of the National Association of Stove Manufacturers, held in Chicago on the 10th and 11th of February, inst. The most important action of the association was the adoption of a new basis of prices for the ensuing six months, as follows: First-class stoves and odd plates, 8 cents per lb.; medium, 7 cents; common, 6¼ cents. A reasonable advance on these prices will be charged for nickel plated and other trimmings. The terms of sale are to be four months' note, or five per cent. off for cash. These prices ought to suit the trade. If adhered to, they will leave a fair margin of profit for both manufacturers and dealers, while giving consumers as large a share of the benefit of the present and prospective cheapness of pig iron as they have any right to expect. We think the experiences of the past year have not been lost upon manufacturers, and that prices will be better maintained in 1875 than in 1874, unless it be that the causes noted in a recent article on the stove trade in these columns shall again lead to a wholesale cut throat competition between novelties and standard goods.

An important event in the history of the association is the retirement of Mr. John S. Perry from the presidency. Mr. Perry, who has held the office for three years, was mainly instrumental in organizing the association, and has done much to place it upon a substantial and permanent foundation. Last year Mr. Perry reluctantly accepted the office for a third term, and in his address this year urged that another be chosen to the place. His successor, Mr. S. S. Jewett, of Buffalo, senior member of the firm of Jewett & Root, is a gentleman eminently qualified for the position, and we congratulate the association upon his acceptance of the honorable and responsible office.

The Disproportion in Value Between Foreign and Domestic Spelter.

The year 1874 opened with foreign spelter at 7⅜c. to 7½c., gold, and domestic, 7½c. to 8c., currency, while this year the former, early in January stood, 7c. to 7¼c., gold, and the latter 6½c. to 6¾c., currency. Instead of this striking disproportion being gradually obliterated, we find that foreign has, under European limits, been advanced to 7½c. to 7⅝c., gold, in this market, while domestic, at least in the lower qualities, has been depressed still further, ranging, as it does, between the extremes of 6½c. and 6¾c., currency. Taking the present average value of Silesian spelter to be 7·25c., gold, and reducing the average rate of domestic spelter, 6·50c., currency, to gold at the present average premium, it will be found that our own spelter commands but 5·66c., gold, the difference between the two thus being upward of 1½c., gold, per pound, or say 27 per cent.

In an article on the "Production and Consumption of Spelter in the United States," in *The Iron Age* under date of November 26, 1874, we called attention to this disproportion, although not as wide then as it is at present. Silesian then ranged between 6⅞c. and 7¼c., gold, while domestic remained 6⅝c. to 6⅞c., currency. Gold was about 3 per cent. lower at the time, and the difference was as follows: Foreign, average value, 7·06¼c., gold; domestic, average currency value, 6·75c., or in gold at 111¾ per cent., 6c., difference, 1·06¼c., gold, or say 15 per cent. We then expressed the hope that by degrees the domestic article would work itself into favor, sufficiently so to wean manufacturers from using the imported, and eventually substituting the former for the latter, thus enabling us to dispense with Silesian altogether. In this we have been to some extent disappointed. Various causes seem to have been at work to not only maintain a material difference between Silesian spelter and the domestic product in point of marketable value, but to widen the gap between the two. Our manufacturers cling to Silesian for the sake of its uniformity, and concede that it is superior to the best brands of domestic; yet, admitting all this, and the force of habit in addition, it cannot fail to strike the impartial observer that the difference has increased in a manner which seems uncalled for, and that other causes must have operated against our home product.

Beginning with the smelting companies, we find that the brands of some of them command half a cent or more above those of competing works; that the ores procured by the latter are represented as running too unevenly to insure even a fair degree of uniformity of production, and that finally, from a lack of adequate means, they are unable to purchase ores as advantageously as the leading companies do under more extensive and judicious contracts. But however this may be, even the more powerful companies, we are told, lose money at the ruinously low selling price. Others attribute the depressed value to imperfect agency arrangements, and to bad management on the part of representatives on the seaboard. They deem the consigning of the spelter to dealers, one of the latter representing one company and another some other one—each of the agents being under continual heavy advances—bad policy, and pretend that the smelters would do better by arranging in common with some financially powerful concern for a joint representation. They furthermore venture to predict that the present loose system cannot possibly last much longer, and that the low price of the metal will force the suspension of some of the smelting works, the business having become ruinously unprofitable.

These are the aspects of the case as they have come under our notice. The New York metal market, languid as it is, and devoid of all speculation as it seems to have been since the commencement of the new year, has remained altogether apathetic with respect to domestic spelter. If the times were active, capitalists would have been active, long ago, to the evident cheapness of the metal, which we are told sells considerably below the cost of production. And yet the course of the European markets has been such as to invest our as yet struggling production of spelter with unusual interest. From the accounts that have reached us from the other side, it seems clear that production fails to come up to the requirements of consumption. There has been hardly any speculation going on in the metal anywhere in Europe, yet the upward tendency which developed in the spring of last year has remained unchecked all along, the stocks on hand at the principal centers being either exhausted or reduced to a mere trifle.

The latest complete particulars of European spelter production, which we have been able to procure, are those of the year 1870.

	Tons.	
Germany in Silesia	39,000	
" the Rhenish Provinces	11,000	50,000
Belgium, Vieille Montagne	35,200	
Remainder of Belgium	9,500	44,700
England		7,500
Russia		3,000
Austria		2,000
Spain		1,500
France		500
Total		109,200

Production in England, from 7500 tons in 1870, declined to 5191 in 1872, and to 4471 in 1873. The returns for 1874 from the smelting works of both the United Kingdom and the United States are not yet at hand. In 1873 we produced 6743 tons. If publicity were given to the American returns for 1874, the suspicions of some in the trade that our domestic production has largely increased, and that this excess is weighing down our own product more than anything else during these dull times, might perhaps be confirmed.

The consumption of metals in Europe since 1870 has vastly increased, especially that of the manufactures of metals into which spelter enters as a component part. Large as the aggregate of European production, as given above for 1870, may seem to us from our own point of view, it probably falls short of requirements in some unforeseen manner, to judge from the unanimity of the reports we receive from the Continent on this subject. Should they continue at the same ratio of excessive consumption for a year or two longer, while we, on the contrary, produce more than we require, the day may be at hand when a counter current will be established, and we shall be exporters, where but ten years ago we had to import every pound we used.

With the possibility of such a prospect before us, our home product is invested with no small degree of general interest, and we trust the business may successfully outlive the severe trial to which it is evidently subjected at the present moment.

The Iron and Steel Association.

Annual Meeting at Philadelphia.

The annual meeting of the American Iron and Steel Association was held at the rooms of the association in Philadelphia, on Thursday, Feb. 12, Mr. Samuel J. Reeves, President, in the chair. The meeting was called to order about 12 m., and Mr. Reeves presented the following address:

ADDRESS OF THE PRESIDENT.

GENTLEMEN: The past year and its predecessor constitute an era in the history of the universal industries which will not be forgotten for generations. Especially may this be said respecting the industry with which we are more particularly connected.

During the early part of 1873 the demand for iron and steel was so great that it could not be met. In England it partook of the character of a famine, and fabulous prices were demanded and paid for iron and its manufactures, as well as for the raw materials used in their production. The demand for additional men to mine the crude materials, and to work at the furnaces and forges, was so great as to incite the laborers to form societies for the avowed object of continually advancing wages and of obtaining their share of the reward which, they supposed, awaited their employers. The result was that, under such an abnormal condition of things, the cost of manufacturing advanced *pari passu* with the selling prices. In like manner the cost of all sorts of structures into which these essential articles largely entered marched upward and upward. Money also entered into the melee, and the ever watchful keepers of the purse drew more tightly the strings which closed their treasures. The prices of nearly everything having been doubled, twice the amount of money was required to carry forward the usual business of the country and its numerous enterprises.

Then came the contest for the possession of loanable funds. The rush was without a precedent. Those who most needed it must have it, cost what it may. The rate of interest was a secondary consideration, compared with the possession of the funds. If those in the ordinary channels of business made up their minds to pay higher, the great railroad companies, which were carrying forward their schemes entirely on borrowed capital, immediately overbid them. And so matters went on stretching and stretching until the modulus of rupture was reached. Then that magical bond of confidence, which in prosperity is stronger than iron and in adversity weaker than tow, gave way and let all things to the ground.

We are now well into the second year of the panic, and yet the wounded and hurt are *hors du combat*. The stagnation of our industries is quite as great at the present time as at the same period a year ago. In that of iron and its uses it is far greater. Now and then a spasmodic effort indicates a disposition to revive business, but it has no power of continuance. Meanwhile a multitude of usually thrifty people, dependent upon the running of iron works, have been without employment, greatly to their individual loss and suffering, greatly to the material loss of the country and to the demoralization of society, the never-failing result of idleness and despair.

The cause of this overturning of the ordinary affairs of forty millions of people has lain deeper than most of us in the beginning supposed. The remedy, therefore, which many have been searching for on the surface, must be probed for deeper down. Some have mistaken the effect for the cause and set up illusive theories to explain it for having no practical value whatever. The folly of wisdom has most conspicuously manifested itself in our Legislatures, in Congress, in our bank parlors, and on 'change. The patient fails to respond to the remedies administered by the doctors, or to the incantations of the magicians, but, nevertheless, there are signs of a recovery at last, coming through the recuperative energies of a robust constitution. It may be very slow, but it will, on that account, probably be more sure.

The report of your Secretary has so thoroughly covered the history and statistics of the trade during the panic period that I deem it unnecessary to occupy your time with mere repetition. I, therefore, refer you to an examination of his thoroughly exhaustive paper for information of the highest value on the subject to which it pertains. I think we can look the future full in the face with the encouraging hope that we have need to wait only a little while longer to see our business returning to a healthy condition. The great panic, through which for eighteen months we have been passing almost without a ray of light, has at least taught us to take new observations before we spread our sails as we did previously, regardless of the state of the barometer. The pause has been a long one, indeed, but henceforth prosperous breezes undoubtedly await us, though our speed may be diminished.

The disasters to trades and industries of all kinds have not been limited to our own country. All nations in the commercial and industrial world have experienced similar reverses. The downfall of iron and steel has been almost as great in England, France and Belgium as in the United States. The same causes, whatever they may be, have produced like effects. The blame, therefore, does not lie entirely at our own door. The last ten years have been years of energy, of immense progress, of unbounded enterprise, intensified by remarkable success. Such force cannot always be on the stretch; there must be relaxation and a time for breathing and recuperation.

Now is the opportunity to prepare for new efforts. Old processes must yield to better ones. Old machinery must be pulled down and better devices substituted. Intelligent economy must now be the order of the day, and our old methods of puddling and rolling and heating must undergo a thorough examination and revision. If the Danks furnace has not come up to what it promised, our inventive powers must be called into action to supply its defects or to supplant it with something better. The Siemens and Ponsard heating furnaces, wherever used, have given better and more economical results than the old style of furnaces. Hitherto we have been limited to the employment of coal of the best quality and highest price for puddling and heating, but we see evidence of the prospect of not only improving the quality of the best coal, but also of utilizing even the poorest kinds without deteriorating the quality of the iron. We must give more time and attention to the working of our blast furnaces, and learn from I. Lowthan Bell and Thomas Whitwell what scientific investigation and experiment can do in the domain of smelting iron.

The late visit to this country of these two distinguished British ironmasters has given an impetus and direction to these subjects which must bear fruit in the future. The pleasant intercourse between these gentlemen and many of our members, whom they met in their hasty tour among our ironworks, will do much to break down the barrier which has hitherto existed between the ironmasters of the two countries. Each will learn to respect and emulate the other, and no doubt the advantage will be mutual. The public dinner given to these gentlemen at the Continental Hotel was a most successful affair, and gave great satisfaction to both the guests and their entertainers, some of whom came a thousand miles to do honor to the occasion. The practice of courtesy between rivals and competitors does away with many of the asperities of trade, and is not inconsistent with the strongest efforts of the contestants to dispossess each other of his accustomed market. Let us, therefore, welcome all respectable and intelligent foreigners to visit our works, as we may in turn desire to be welcomed and afforded the opportunity of visiting and inspecting theirs.

A great deal has been said in the report of your Secretary in regard to the large number of people employed in the manufacture of iron and steel who for so long a time have been idle and unable to support their families. This is one of the saddest features of the crisis which the trade has been experiencing. Admitting the number idle in iron-producing establishments to be only a hundred thousand, and the value of their joint wages to be as little as one dollar per day, it is equivalent to a production of half a million tons of iron, worth in the aggregate thirty million dollars, as the price of one year's idleness. This is a great loss to the wealth of the country, and at the same time a fearful deprivation to that large class of workingmen who are suffering from want of the means to support their families.

It is a common, but not very satisfactory, answer regarding this condition of affairs, to attribute it to what is called over-production, which means that we produce too much iron, too many yards of cotton and woolen goods, and too much hardware; that we cultivate too many acres of land and build too many houses, too many ships and too many miles of railroad. And yet we owe nearly two thousand millions of debt to foreign countries for their share in supplying us with the materials which, if produced by ourselves, would have been clear gain to our stock of wealth. We fancy that we borrow money when we give millions of our obligations to foreigners; but that is far from being true; on the contrary, we buy perishable commodities on long years of credit, and every sixteen years we pay the debt over again in interest without an equivalent.

The current of gold, like the Gulf Stream, flows eastward perpetually; none of it comes this way. Perishable goods are all we get in return, while our debt remains and increases in magnitude. Did we produce everything at home, within our means and ability, the debt due abroad would be owned at home, and would not trouble us. As well might we advise the farmer, who has prepared his land with manure and careful culture, to put in seed for only half instead of a whole crop, for fear of having too much grain to sell. When there is a sufficient diversity of interests among communities there can be no such thing as overproduction. To say that there is too much wheat, too much corn and potatoes, too much iron, too much clothing and too many houses—we might as well say there is too much comfort, too much prosperity, too much wealth.

We import millions of commodities from abroad, adding to the wealth and comfort of foreigners, while our own people are idle for want of occupation; and yet we have it thrown in our teeth that we over produce. Our true policy is to make everything at home that we can, and import only what the country, from climatic, or other natural difficulties, is not capable of supplying. No people can progress who permit idleness to exist when they can easily prevent it—who depend on others when they are able to do for themselves. Employment is wealth; the lack of it is poverty. A nation of free people should, therefore, so legislate as to create employment for all, and, consequently, comfort and happiness for all.

Only since the incoming of the new year we have been called to mourn the loss of one of our most energetic and intelligent ironmasters; one to whom the Western section of the country, particularly, is indebted for the great impetus it has received in the extension of the manufacture of iron and Bessemer steel. I refer to the late E. B. Ward, of Detroit, formerly President, and, until his death, Vice President, of this Association. His interest and enthusiasm in everything relating to the development of our home industries have been conspicuous and effective. His time, talents and means have ever been freely given to the creation and extension of a wholesome public sentiment on the subject of protection to American industry. He believed that our people can never be freed from the thraldom of foreign influence and foreign debt until we cease importing articles that we can better make at home under the paternal care of government. Mr. Ward was not only engaged very extensively in the manufacture of iron, but had also large interests in the glass and lumber business. He was also a successful agriculturist. Success attended him in whatever he undertook, and his loss will be severely felt not only by the members of this Association but also by the multitude of people to whom he gave employment.

THE SECRETARY'S REPORT.

The annual report of the Secretary, Mr. James M. Swank, was then read by title, and printed copies were handed the members. Of this report we presented a very full abstract in our last issue. A supplemental report was then read by the Secretary, from which we make the following extracts:

In my annual report for the year 1874, which is herewith presented, the statistics of the iron trade of our own and other countries for late years are given as was fully as possible, accompanied by such observations as seemed to be pertinent and desirable. Since the report was sent to the printer, in December last, some additional information concerning the production of pig iron in the United States in 1874, and the stock on hand at the close of the year, has been received, and this information may properly be epitomized here:

Of 696 completed furnace stacks in the country, 472 had reported to the Association up to the 10th of February inst. their condition on the 1st of January last. Of these 472 stacks, 260 were then in blast and 212 were out of blast. In addition to these 212 out of blast, 37 of the 260 then in blast were announced to be blown out in January. This would give on the 1st of February 249 furnaces out of blast, 223 in blast, and 224 to be heard from. Of the 224 not reporting, it is entirely safe to assume that one-half of them were out of blast on the 1st of February. Fully one-half of all the furnaces in the country were therefore out of blast on the 1st of February, a degree of depression not previously reached since the beginning of the panic. The 472 reporting stacks are classified as follows:

Anthracite.—In blast Jan. 1, 105; out of blast, 70; to be blown out, 8; total, 175 stacks.
Bituminous.—In blast Jan. 1, 59; out of blast 69; to be blown out, 9; total, 128 stacks.
Charcoal.—In blast Jan. 1, 93; out of blast, 71; to be blown out, 20; total, 164 stacks.
Mixed Fuels.—In blast Jan. 1, 3; out of blast, 2; total, 5 stacks.

The 472 reporting stacks return an aggregate of 560,871 net tons of pig iron as unsold on the 1st of January last; of which 184,930 tons were anthracite, 160,999 tons were bituminous coal and coke, 150,197 tons were ordinary charcoal, and 64,745 tons were car-wheel charcoal. We omit any estimate of the probable quantity of pig iron in unsold on the 1st of January by the 224 non-reporting furnaces, but will add that of these furnaces 40 were anthracite, 53 were bituminous coal and coke, 128 were charcoal, and 3 were mixed fuels.

The membership of the Association now embraces 187 individuals and corporations, representing 21 States. From Maine to California, and from Michigan and Wisconsin to Georgia and Alabama, the iron trade contributes to the maintenance of this Association, and sends expressions of sympathy and good will. The encouragement thus extended and the confidence thus reposed make the Association national in every fibre of its being, and place its officers and those members who can most conveniently attend its meetings under renewed and stronger obligations to guard with zeal and without selfishness the interests of every branch of the American iron trade.

It is a cause of gratification that the example of the iron and steel makers of the country in forming a national organization that shall be representative of its interests is being followed by many of the other leading industries. The manufacturers of cotton and wool and the wool growers have long been organized, and recently the stove manufacturers, the lumbermen, the silk manufacturers, and the manufacturers of pottery have formed organizations for the advancement and protection of their respective industries. The National Industrial League, of which one of the members of this association is president, still continues the educational work it has long so successfully prosecuted. With nearly all of these organizations we are in constant and frequent correspondence.

It is deemed vitally important to the future prosperity of the iron trade of this country that the duties now imposed upon iron and steel of foreign manufacture be firmly maintained, and if possible increased, but every indication points to the conclusion that one of the severest struggles for the ascendancy of the protective policy that the country has ever witnessed will begin this year. Our iron and steel manufacturers and all other manufacturers will do well to make preparation to meet it.

I recommend that the next annual meeting of the Association be held in one of the principal Western or Southwestern cities. This seems to be desirable for many reasons, but principally that our members in the South and West may be afforded an opportunity to attend the meeting, and to aid by their counsel in extending the usefulness of the Association.

I call the attention of the Association to the importance of a proper exhibit of the iron manufacture of the country at the Centennial Exhibition, the success of which is now assured. I learn, upon inquiry at the office of the Centennial Commission, that only thirty applications have thus far been made for space in which to exhibit iron and steel products, including iron ores, and that the space proposed to be occupied is 7000 square feet. This number of applications and the limited sphere of the iron industry proposed to be covered by them is wholly out of proportion to the magnitude and importance of that industry, and I submit to the consideration of the Association the question whether it is incumbent upon it to take any steps toward securing a more creditable representation of iron and steel products at the exhibition than is now foreshadowed.

On the 16th of October, 1873, the Hon. Daniel J. Morrell, chairman of the Executive Committee of the Centennial Commission, addressed a letter to the President of this Association, advising the acceptance by the Association of the task of making a suitable collection of the iron ores, fuels, fluxes, etc., of this country, used in iron making for the exhibition, accompanied by proper analysis. At the annual meeting of the Association, on the 20th of November, 1873, this task was formally assumed. On the 22d of January, 1874, the announcement was formally made in the *Bulletin* that a commission of scientific gentlemen had been selected to assist the Association in performing the scientific part of the work involved in making the proposed collection. In this announcement the plan recommended by the Chairman of the Executive Committee, and adopted by the Association, whereby the expense of making this collection should be borne, was explained as follows:

"In the communication from the Centennial Commission to which reference has been made, it was suggested that 'a fund be raised by private subscription to defray the inevitable expense of the collection of ores, and placed in the hands of the Treasurer of the American Iron and Steel Association.' The wisdom of this suggestion will at once be apparent to all who give it thoughtful consideration. The collection of the ores and their analyses will invove a large expense, and it is proper that producers and consumers of these ores should be granted an opportunity to contribute to this expense. As contributors they should know what disposition has been made of their money. It should not be confounded with other funds in the treasury of the Association. The Treasurer of the Association, Charles Wheeler, Esq., is the Vice-President of the Central National Bank of Philadelphia, and all moneys contributed for the collection and analyses of the ores would be safe in his hands. The Association therefore accepts and approves of the suggestion of the Centennial Commission, and pledges itself to use economically and judiciously the special fund that may be created, and which will be designated in its records and publications, *The Centennial Fund*. Contributions are solicited. The Secretary is authorized to personally request the pecuniary co-operation of all ironmasters and ore producers. It is earnestly desired that this co-operation be promptly rendered. The work which has been undertaken is of vast importance, and it should be vigorously prosecuted. Were there never to be an International Exhibition in this country, it would still be desirable that the country should fully know the extent and variety of its resources in iron ore and the other minerals necessary to manufacture iron. There is nowhere to be found a complete collection and analyses of our iron ores and fuels. This want it is now proposed to supply. Drafts or checks may be sent to the Treasurer, at the office of the Association, No. 265 South Fourth street, and their receipt will be duly acknowlenged. Letters of inquiry may be addressed to the Secretary."

Nothing could be plainer than the above statement of the *terms* on which the collection of the ores was accepted. These terms were widely circulated, for, in addition to their publication in *The Bulletin*, they were copied into *The Iron Age* and other journals of prominence. The success of the scheme depended, not upon the fidelity of the Association to its trust, but upon the interest and liberality of the producers and consumers of iron ores, fuels, etc. The Association never proposed, and its officers certainly had no authority, to use the funds contributed for other purposes to defray the expenses of the collection and analyses of the ores and other materials. With this explanation, it is my duty to state that *not one dollar* has been received by the Treasurer in furtherance of the scheme which was so carefully matured and so plainly submitted to the country. The scheme has thus failed of success because those most interested in its success have failed to sustain it.

In making this statement of facts, it is proper that some of the reasons should be stated why contributions to the Centennial Fund were not made. For many months after the plan of the Association was submitted to the country much doubt existed whether there would be a Centennial Exhibition at which ores or anything else might be exhibited—this doubt arising from the refusal of Congress to appropriate money deemed essential to the holding of such Exhibition. This doubt was not dispelled until half of the year 1874 had passed. Another reason why contributions were not made is explained by the widespread depression in the iron trade caused by the panic. These two reasons constituted of themselves a serious obstacle to the success of the scheme, and may be regarded as a sufficient excuse by the consumers and producers of the raw materials of iron manufacture for their failure to sustain it.

I submit the whole question of the Centennial ores to the Association for such action as to it may seem proper, remarking, however, that no alternative is left to it but to resign the trust it has accepted or adopt some new plan by which it may be faithfully executed.

The reports were accepted, and the Secretary thanked by resolution for the able and intelligent work performed by him during the past year.

Mr. Z. S. Durfee, of New York, then delivered an address upon the relation of the producing interests of the country to the question of transportation, which, he thought, had not received adequate attention. An abstract of this paper is given elsewhere.

Joseph M. Wharton offered a resolution that a committee of seven be appointed to collect funds and take the necessary action to secure a creditable display of ores and fluxes at the Centennial Exhibition. Agreed to.

The following gentlemen were appointed upon this committee: D. J. Morrell, Joseph Wharton, A. Carnegie, William Frimstone, J. I. Bennett, W. E. C. Coxe, and Fayette Brown.

Resolutions of regret at the death of Mr. E. B. Ward, late Vice-President of the Association, were passed, and Mr. Joseph Wharton was elected as his successor.

Mr. Wharton then offered the following resolution, which was adopted:

Resolved, That this Association highly approves the action of the United States Senate in rejecting the reciprocity treaty with Canada, and, further, does most earnestly protest against any attempt to regulate import duties by treaty, as being totally opposed to the principles of the National Constitution.

The meeting then adjourned.

Making Boxes.—The Swiss have a clever way of making cheap boxes without the use of nails, the mitred sides being fastened together by wedge shaped pieces of wood. An English inventor has recently patented another process, which may be used for heavy as well as light boxes. The two pieces of wood to be fastened together are first mitred in the ordinary way, and a hole is then drilled in each piece vertically from the bottom upward, at a short distance from the mitred edge. A channel or groove is then cut by a saw or otherwise from the mitred edge to the drilled hole. This channel is of less width than the diameter of the hole, and may be cut either parallel to the sides of the piece of wood or at right angles to the mitred edge, so that when the two edges are put together there shall be a continuous channel from one side to the other, shaped somewhat like a dumb bell, and running from the top to the bottom of the box. A key is formed by running a fusible metal, such as lead, into this channel. The key may be made separately of solid metal and driven into the channel—but, in either way, a joint is formed which can be broken only by tearing away the mitred edges of the wood.

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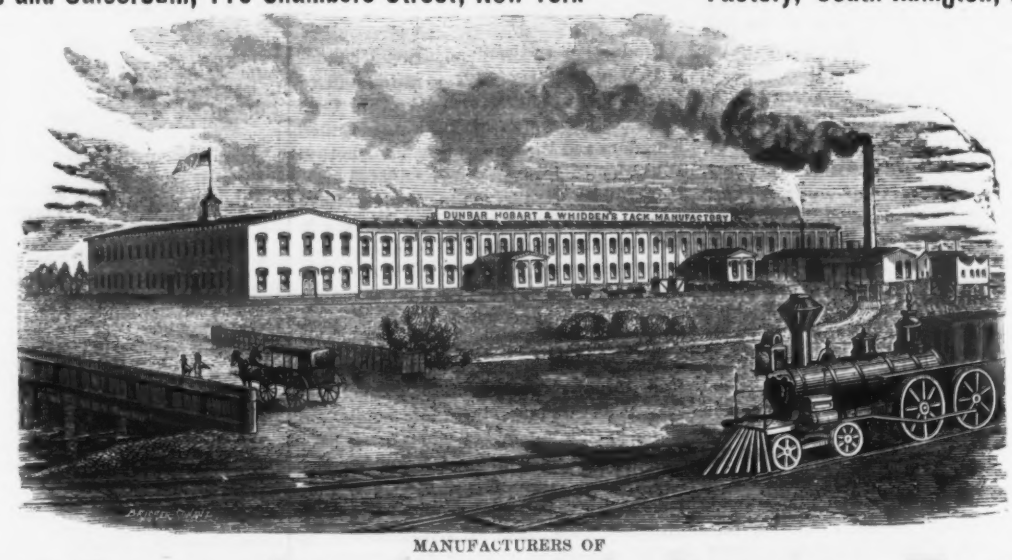

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Depot for New York City Delivery, with UNION HARDWARE CO., 120 Chambers, and 50 Warren Street.

The National Association of Stove Manufacturers.

The Annual Meeting at Chicago.

The National Association of Stove Manufacturers assembled in Convention in the Palmer House, Chicago, at noon on the 11th inst.

The meeting was called to order by Giles F. Filley, of St. Louis, the first Vice President, who stated that the President, Mr. John S. Perry, of Albany, N, Y., was unable to reach town in the morning train owing to the snow blockade. Mr. Josiah Jewett, secretary *pro tem*, then proceeded to call the roll, and the following gentlemen responded to their names:

D.M. Thomas, of Jones, Thomas & Smart, Medina, O.; J. W. Roelker, of J. H. Roelker & Co,. Evansville, Ind.; S. W. Perry, of Sweet, Quimby & Perry, Troy, N. Y.; George C. Baldwin, Jr., of Eddy, Corse & Co., Troy, N. Y.; David Bell, of Joseph Bell & Co., Wheeling, W. Va.; George Mixter, of the Rock Island Stove Company; M. D. Seward, of the Bloomington (Ill.) Stove Company; S. R. Burton, of Redway, Burton & Co., Cincinnati; D. G. Leslie, J. N. Raymond, of Abendroth Bros., New York city; G. H. Johnson, of Johnson, Black & Co., Erie, Pa.; Josiah Jewett, of Jewett & Root, Buffalo and Chicago; Charles W. Day, do.; N. A. Boynton, of Richardson, Boynton & Co., New York city; J. A. Dutcher, of Dutcher, Voss & Adams, Millwaukee; C. Olhaber, of Mears, Olhaber & Co., Cincinnati; C. O. Green, Troy, N. Y.; J. H. Mitchell, of Mitchell, Stevenson & Co., Pittsburgh; R. A. Culter and D. C. Proctor, of Culter & Proctor, Peoria, Ill.; W. A. Clark, of G. H. Philips & Co., Troy, N. Y.; Andrew B. Fales, represented by C. O. Green, Troy, N. Y.; William Galloway, of Galloway, Semple & Co., Cincinnati; S. H. Keep, of the Wager Stove Company, Troy, N. Y.; T. R. Beckwith, of Cleveland (O.) Stove Company, D. G. Littlefield, of Littlefield Stove Company; Albany, N. Y.; W. H. Tefft, of Detroit Stove Works; G. F. Filley, of Excelsior Stove Works, St. Louis; C. H. Buck, of Buck & Wright, St. Louis; E. G. Callahan, of Bridge, Beach & Co., St. Lous; Albion Ransom, of S. H. Ransom & Co., Albany, N. Y.; John F. Rathbone, Grange Sard, Jr., Edward Bowditch, of Rathbone, Sard & Co., Albany and Chicago; A. Bradley, of A. Bradley & Co., Pittsburgh; W. P. Warren, of Fuller, Warren & Co., Troy, N. Y.; W. H. Whitehead, of Tibbals, Shirk & Whitehead, Erie, Pa.; H. Cribbin, of Rochester Co-operative Company, Rochester, N. Y.; James Brackett and E. E. Sill. of Sill Stove Company, Rochester, N. Y.; R. H. Long and B. M. Anthony, of Michigan Stove Company, Detroit; J. L. Taplin, of Taplin, Rice & Co,, Akron, O.; R. Lape, of Bussey McLeod & Co., Troy, N. Y.; R. Lape, S. A. Craig, and S. F. Mann, of Chicago Stove Works.; P. B. Acker, of Union Stove Works, New York city; W. R. Burgees, of Rhode Island Stove Works, Pawtucket, R. I.

The following gentlemen subsequently appeared:

J. S. Perry, N. B. Perry, of Perry & Co., Albany, N. Y.; George W. Robertson, of Southard, Robertson & Co., New York city; R. P. Myers, of Myers, Rou-e & Co., Cleveland, O.

BUSINESS PROGRAMME.

Mr. Olhaber, of Cincinnati, moved that a committee of seven be appointed to prepare a business programme for the consideration of the convention, which prevailed. The following gentlemen were selected: Messrs. John F. Rathbone, S. R. Burton, C. O. Green, H. Cribben, N. A. Boynton, J. A. Dutcher and G. H. Johnson.

The Chairman and Secretary were, on motion of Mr. Rathbone, added to the committee.

Adjourned until 4 o,clock p. m.

AFTERNOON SESSION.

The meeting was called to order at 4 o'clock, p. m. Mr. John S. Perry, of Albany, president in the chair. Mr. W. A. Clarke, of Troy, N. Y., was elected secretary *pro tem*.

The following is an abstract of

THE PRESIDENT'S ADDRESS:

Although it is true that our whole country has not kept pace in wealth and population with the great cities of the West, yet we have the most abundant evidence of a continued and permanent advancement in every department of industry.

We need give ourselves no uneasiness on this subject—the result is certain. What we have to do is to so conduct our business that the yearly balance shall be on the right side. This is a very simple matter. It consists in maintaining our prices at a reasonable point above the cost of production, and this cost does not cease with the completion of the article, but continually goes on until the money from the sale is actually received.

When the business of each year is closed, the bills paid, and the accounts collected, we then first learn the true condition of the profit and loss account.

We have now had an experience of three years under the influence of the Association, and imperfect through it has been, I think all will be ready to admit that good results have been attained, both financially and socially. A more intimate acquaintance with each other has served to increase our mutual respect and confidence. Prejudices and unfriendly feelings that had, to some extent, been indulged toward other members of the trade, were found to be without just cause. We discovered that our efforts were all to the same end, and that we had only to pull together to realize to each the best results.

In March, 1872, when our Association was founded, we had the names of 275 stove founders.

From the latest returns made to me, I estimate the number now in active business at 200, 150 of whom are members of our Association. The remaining 50 are, with a few exceptions, in the volume of their business, quite unimportant.

Even the smallest of them, however, is able to materially effect our prices if not the amount of our sales, and it is, therefore, very desirable that all should be brought in, that we may, at least in theory, be guided by some uniform principles of action.

It cannot be expected that 200 manufacturers, so diversely situated, and to a certain extent so antagonistic in interests, could fully illustrate in practice the anticipated millenium, when lions and lambs should dwell peacefully together, but a long step in advance can be realized when the whole trade, or any considerable proportion of the same, are brought together, and at least started upon a common plane.

Suppose that each one of these 200 manufacturers adopted prices independent of the others, each fearful least some one might be below him; what other result could be expected but that of disaster?

If the members of the trade can be induced to adopt uniform rates and terms, and will promise to make honest efforts to maintain them, the desired result will be half achieved.

No more powerful influence can be used to maintain fair paying prices than a knowledge of the actual cost of our goods. Not one of us desires to sell his stoves without a fair profit, or will consent to do so for any continued time. I believe that in discussing and arriving at the true average cost will be found our great strength as an association. We are not called upon to divulge the secrets of our own business, but to treat the subject in such a way that it may have general application.

I hope that this vital question will have a more full and free discussion than has yet been given to it. If it can be clearly shown that at given prices for material and labor, stoves cost $120 per ton, and this result be accepted as truth by the trade, we shall not be likely to hear of desirable patterns being sold to any great extent at $10 or $20 below these figures. It cannot be denied that only a small proportion of manufacturers of stoves know the cost of their products. Nothing is more deceptive than figuring upon single stoves, and guessing at the contingencies; such estimates generally show a fine margin of profit, which too often fails to appear when the final balance is made.

I have seen no reason to change the views expressed in March, 1872, as to the cost of making 3000 tons of stoves, unless it be to increase the estimate. A small founder who makes a few stoves with other work for supplying a local trade, and with few changes of patterns, can doubtless produce a low grade of work at considerable less than $120. Or a manufacturer who borrows no money and has no rent to pay, can show a handsome reduction upon that sum, if he does not take into account the interest upon the capital invested. You will, I think, agree with me, that any business conducted upon such a basis would, in its final results, be disastrous to borrowers and rent payers.

With an average cost of iron, of say $32·50, and a slight reduction upon tools and stove trimmings, it may be safe to assume, upon the basis of the former estimate, that the cost of ordinary and medium qualities of stoves during 1874 was about $110.

I ask you, gentlemen, does not your balance sheets indicate that this amount is below the real truth? It is to be hoped that they show for the past year a satisfactory result, but I greatly fear that in this many of us have been disappointed. How can it be otherwise? with more or less high priced iron on hand at the beginning of the season, with little or no reduction of wages, but with a heavy reduction in the prices of our stoves, the business of 1874 must have failed to pay a reasonable reward for the labor and the use of capital.

In our estimate of cost the item of molding is put down at $27·50. Can any manufacturer say that in a fair variety, of such a quality of stoves as the public now demand, this sum is not considerably exceeded? It may be quite true that a calculation of the cost of molding, based upon a single stove of each kind, would show a range of $20 to $30, or an average of $25 to $27. Such estimates are valuable for contrasting the relative cost for molding different kinds and sizes, but as a basis for prices they are wholly delusive.

They take no account of the extra cost for day work, of fictitious returns of plates made to satisfy the molders, and of which the principals generally have no knowledge, or of imperfect work allowed on account of bad iron.

These, and other contingencies that might be mentioned, are inevitable, and they amount to an alarming sum. When we have ascertained the whole amount paid for molding, and divided it by the number of tons made, we shall have a tolerably correct idea of the real cost. I venture to assert that in all foundries, excepting those where the bulk of the work is coarse and heavy, the average cost for molding during the year 1874 exceeded $30 per ton.

That this sum is at least $7·50 too much we shall all agree. It is far out of proportion to the cost of other items which enter into our manufacture, to the cost of living, and also to the prices which we can realize for our goods.

The system of paying uniform prices for molding to skilled and unskilled workmen is at war with both justice and common sense. All sensible men must see the folly of such a leveling system, and the gross injustice to the moral, skillful and industrious mechanic. If the present average prices paid for molding is fair, then the unskilled and unreliable workmen are largely overpaid at the expense of the more deserving.

Take the item of mounting, which is stated at $7·50 per ton. Who of us does not know that, with the exception of plain common stoves, the cost for labor will be nearer $10 or $12. The amount of additional labor now expended in this department, over that which ruled but a short time since, calls for serious reflection in the adaption of our prices.

There is an item of loss not included in the estimate to which I desire to call your attention. It is the loss upon unsaleable stoves. We all suffer from this cause more or less, and it is one that should be taken into account as a part of the cost of our products. There are but few of us who have not been compelled to sell such portions of our stock at a loss, or, what is worse, to return it to the cupola. It is, therefore, a legitimate charge upon the business.

Iron of the quality required for stove plates is now firmly held at $27 to $28, and with an upward tendency. It is believed that furnaces will go out of blast rather than continue to manufacture and sell below $30. If the published statements of the cost are correct they cannot afford to do so. The report during the past 12 years show the cost of anthracite iron upon the furnace bank to have averaged $29·47. It will not be safe for us to predicate our prices upon iron below $30. We cannot expect to reduce the cost of molding below $27·50, or mounting below $7·50. On promiscuous labor and supplies of various kinds we may fairly estimate a reduction of, say 10 per cent. The account will, therefore, stand as follows:

Estimate of cost, March, 1873		$120·00
Reduction on iron	$10·00	
" " promiscuous labor	1·27	
On supplies	·83	— $12·10
Cost of an averaged quality of stoves for 1875		$107·90

This amount, based upon the estimate of 1872, will probably vary from $105 to $110. In my judgment, the truth would be nearer approximated by assuming the cost for the coming year at $115 to $120. On first-class stoves the cost will be considerably more, depending upon the amount of labor expended thereon, and the kind and quality of fittings.

In view of these considerations, I conclude that the lowest prices at which our stoves can be sold the present year, compatible with a reasonable return for the risk, labor and use of capital, are as follows:

Common square stoves	6¼c.
Same with reservoirs	6¾c.
Second-class square stoves	7c.
Same with reservoirs	7¼c.
First-class square stoves	8c.
Same with reservoirs	8¼c.
Odd castings	8c.

Terms 4 months credit, or 5 per cent. discount for cash.

These prices are as low as any desirable patterns of stoves can be sold. It is expected that obsolete patterns will be sold at any price they will command, but this should be no criterion for our general list. We are too easily influenced by the reports of buyers, and reduce our prices below a paying point upon the weakest evidence.

It is my decided opinion, that in consideration of the greatly increased cost for patterns and blocks, and the large amount of extra work and costly fittings that are now required to be put even upon common stoves, that no manufacturer can realize a fair increase upon his capital at prices below 7c. to 10c.

The system adopted by some manufacturers to discount 5, 10 or 15 per cent. from prices established as net, I think is greatly to be deprecated. It gives a greater unsteadiness to the market than an occasional abatement of 50c. or $1 upon a stove. Every buyer can easily remember the rate of discount offered, while he cannot so easily remember odd figures upon promiscuous stoves. Beside this, the loss to the seller is much greater under the discount system, and in most cases the buyer is no better satisfied.

Firmness gives confidence, and those who offer to their customers good articles can afford to be firm, and the result will show larger sales and a more satisfactory balance sheet.

It has frequently been suggested that too many stoves are made for the legitimate demand, and that some plan should be adopted to equalize the same. With far more prospect of success than we could hope for, the manufacturers of pig iron have attempted to introduce this system, and have met with a most signal failure. All the conditions in such an attempt must be uniform to insure unanimous action. Demand and supply will regulate this, and when it is discovered that foundries can only be partially occupied, they will sooner or later be converted to some other use.

In the present state of the market, and with an unpromising future, it is not probable that much additional capital will be put at the risk of our branch of business. Indeed, he would be a very bold man who would now embark in it. Without great experience and plenty of capital, such a venture would certainly end in disaster. To devise and construct popular and successful stoves in this day of exacting public taste and desire for change, is a very difficult accomplishment, requiring genius, skill and experience—qualities that are somewhat rare.

In former years, when a few sets of plain patterns were sufficient to start business, which could then be run for several years without change, no unusual combination of qualities was required to ensure at least a moderate success. But as we all know to our cost, fabulous amounts are now yearly expended, ranging from $5000 to $30,000 by each establishment; and the evil is constantly growing worse. In view of this, and other considerations seriously affecting us, I cannot see how it is possible for all who are now in the business to make it remunerative.

Frequent reference has been made at our meetings to the question of employing commercial travelers. We all deprecate the necessity of spending $8,000 or $10,000 a year for this branch of service, and would rejoice to be relieved of it; but under the present circumstances I fear it is impossible. It is a growing evil, and one that we are powerless to overcome. It has taken possession of all branches of business, and promises at no distant day, here as in England, to control the sales of merchandise. There is only one way that I know of to successfully meet it, and that is to increase the price of our goods in proportion to this extra cost. To this matters must finally come, and we may as well begin to recognize it.

That the character and volume of the business of the coming year is very uncertain, we must all admit the signs of the times are somewhat portentious, and it will be well for us to give heed to them. * * * * *

And this naturally leads us to the question of reciprocity with Canada, which deeply interests both our farmers and manufacturers. Thanks to the wisdom and patriotism of the American Senate, this proposed treaty, so fraught with danger to our industrial interests, has been forever, we may hope, consigned to oblivion.

It may be assumed that the Centennial Exhibition, to be held in Philadelphia in 1876, will be a success, and it becomes every American, and especially every manufacturer, to lend it his power and influence. The leading governments of the world have signified their intention of being represented, and there are sufficient indications to warrant the belief that the exhibition will be the most extensive and interesting ever held on this continent. The members of the National Stove Association should avail themselves of this favorable opportunity to bring their specialties into favorable notice.

Our honored associate, Mr. Filley, of St. Louis, has on former occasions called our attention to the relative cost of light and heavy stoves, and has argued, from his point of view, that the greater profit to the manufacturer is found in the latter. I have been unable to accept all of his conclusions, and for the purpose of again opening this subject for discussion, I will state those to which I have arrived.

I will assume that A and B have foundries of equal size, and that each shall produce 20,000 cooking stoves of a given size, the one weighing 300 pounds, and the other 270 pounds. In all other particulars the circumstances are supposed to be equal. Thus:

A makes 20,000 stoves weighing 300 lbs. each, absorbing 3000 tons of iron, costing $40 per ton		$120,000·00
He pays for molding, $3·33⅓c. each		66,800·00
" " mounting, 60c each		12,000·00
" other expenses, $47·26 per ton, as assumed in estimate of March, 1873		141,780·00
		$340,580·00
B makes 20,000 stoves weighing 270 lbs. each, absorbing 2700 tons of iron, costing $40 per ton		$108,000·00
He pays for molding, $3·33⅓c. each		66,800·00
" " mounting, 60c. each		12,000·00
" other expenses on 3000 tons at $47·26 per ton		141,780·00
Add extra for broken castings	·50	
Add for broken patterns	·95	
10 per cent	$1·45	
On 2700 tons, 14		378·00
		$328,958·00

He saves 10 per cent. on the following items:

On coal	$2·50	
On breaking and wheeling iron	·41	
On laber, piling iron and wheeling castings	·60	
On hoisting, piling, and shipping stoves	·60	
On insurance	·25	
	$4·36	
10 per cent. on 2700 tons		1,177·20
		$327,780·80
Interest on cost of iron	$12,000·00	
On above savings, 2700 tons at $4·36	11,772·00	
	$23,772·00	
At 7 per cent	1,664·04	
For 6 months		832·02
		$326,948·78

I thus show, that the cost for making 20,000 stoves, weighing 300 lbs. each, assuming the items not mentioned as stated in table No. 1, of March, 1872, is $340,580·00
Same for making 20,000 stoves weighing 270 lbs. each 326,948·78

$13,631·22

If the stoves are all sold at the same price, the loss upon those weighing 300 pounds will be $13,631·22.

As an offset to this loss, we may state the advantage to A of having the most saleable stoves, and the satisfaction of giving the public the best article.

If the stoves are all sold at 7 cents per pound the account will stand as follows:

20,000 stoves, each weighing 300 lbs., at 7 cents, $21	$420,000·00
Cost as per previous statement	340,580·00
Profit	$79,420·00
20,000 stoves, each weighing 270 lbs., at 7 cents, $18·90	378,000·00
Cost as per previous state ment	326,948·78
Profit	$51,051·22

Thus showing a difference in favor of the heavy stoves of $28,368·78, or $1·42 each.

In view of this result, the only question to be consiered is; can A sell 20,000 stoves at $20·32 each, with B for a competitor offering stoves of same size and pattern for $18·90, or $1·42 less? In these days of close buyers, I think at the end of the year A would find himself burdened with a large stock.

For three years past the association has honored me with the highest office in its gift, and I sincerely hope that some reward has been returned to each member of the same. I have aimed to serve you impartially, and as fully as my health and more imperative engagements have permitted. The association falls far short of what it might be to the trade, but time and experience will more perfectly show that it can be used with a mighty power to promote its interests. It was not in accordance with my wishes or judgment, that through your favor I was re-elected at the last annual meeting, and I am now more strongly convinced that a change is desirable.

I will continue to serve you as a lay member, to the best of my ability, but it is my request and advice that some one of the many able men associated with us be elected to the office for the coming year.

WELCOME TO CHICAGO.

Mr. W. H. Whitehead, of Chicago, then delivered the address of welcome, which was in the following words:

Mr. President and Gentlemen: As representatives of one of the great manufacturing interests of our country, I have the honor of extending to you a welcome to our city. When emigration began to develop the latent resources of the Northwest, a new impetus was given to trade which exhausted our ability to supply the increasing demand; then the communities which you represent contributed many of your best and most enterprising men to unite their energies with us. This, together with other causes, has forced the growth of a town until it has become in population the fourth or fifth city in the Union. Being under obligations in this respect, our welcome to you is not unmixed with gratitude. As a city, we are favored with public journals which, for enterprise and ability, are generally admitted to be second to none in the country. They have made our business prosperity so well known that it may not be necessary for me to dwell at length on this subject. Yet I trust you will allow me to present a few facts and statistics for your consideration.

The last annual report published by the Board of Trade shows that the receipts for the year included 98,935,413 bushels of grain, 4,570,906 hogs, 761,428 head of cattle, and 517,923,000 feet of lumber. While Chicago is a great mart for commerce in many other products, the above named items are mentioned because we deal in these more largely than any other city on the continent. In presenting these facts due credit must be given to the large number of railroad companies that have here centered their lines from all directions, and employ their capital, and large and increasing facilities, to gather and distribute a great variety of the products of mechanical and agricultural industry, according to the demands of trade.

Our manufacturing interests are varied, but many of our factories are of recent origin, and therefore do not now occupy that prominent position which we hope they will command when the required time has been given for future development.

I will not trespass upon your time by describing our many public and private improvements, because we hope to be able to show them to you at some time when it may be convenient for you to see them. Although the trade of the past year does not show that marked increase which others have exhibited, it has reached the sum of $639,000,000, being a gain of more than 7 per cent. over its immediate predecessor. Some idea of the extent of our lake commerce may be gained from the fact that during one year 11,858 vessels entered our harbor, and the records of our Custom House show that our importing business is receiving that attention which gives promise of future greatness.

In contemplating all of these wonderful results, we do not claim that they have been accomplished by our own business skill, for Chicago is so situated between the oceans, and at the head of lake navigation, that she necessarily becomes a great channel of trade through which products of labor are transferred, thus adding directly or indirectly to her prosperity. Her progress has been so identified with the business growth of the whole country that in so far as you, gentlemen, and the localities with which you are connected, have contributed to the commercial greatness of our country, you have at the same time increased our success as a city. In view of all this, we welcome you as colaborers in our commercial pursuits.

By your industry and inventions, rough iron is changed into smooth, desirable and beautiful forms of household furniture, which minister to the comforts and wants of mankind, by making fire a servant, and placing it under complete control. You remember when this element became our absolute master, and in a few hours scattered the accumulations of years to the wind, and left in ruins and ashes that which we had considered the glory and pride of our commercial greatness. In those dark hours you came so nobly to our relief that it is with no ordinary emotions that we now welcome you as our friends, not to a city in ruins, but to one restored to much of its former beauty.

In conclusion, we hope that your convening together may advance your great business interests, and that the time spent with us may be pleasantly and profitably employed.

Mr. Olhaber, of Cincinnati, moved that the two addresses be spread upon the records.

Col. Rathbone, of Chicago, said that, while he admired the ability and statistical information of Mr. Perry, whom the Association had honored by electing him their president during three successive terms, at the same time he should like to know why Mr. Perry had thrown a fire brand into the Association by sending a circular round last July, in which it was stated that certain patents had been purchased by his firm, others invented, and in which there was a threat of legal proceedings unless the firms paid royalty to the establishment at the head of which was the President of the Stove Manufacturers' Association.

Mr. Olhaber—I think this is out of order.

Mr. Perry, who had previously resigned the chair to Mr. W. H. Tefft, the third Vice President, hoped that the gentleman would be allowed to proceed.

The Chair—There is no disposition to interfere.

Mr. Olhaber—I call for the ruling of the Chair.

The Chair—I think the gentleman is in order.

Mr. Olhaber—I appeal from your decision.

A vote was taken, and the Chair was sustained.

Mr. Rathbone concluded by reiterating his former statement.

Mr. Perry, in reply, said that his firm had brought several patents, thus simplifying the mode of obtaining privileges, by consolidating the ownership in one firm, instead of having it scattered among half a score. Was it a crime? Also, the firm had made some discoveries and had them patented. Was that a crime? They certainly had a right to send a circular to the divers firms, just as they would have a right to talk trade with any individual firm. There certainly could be no crime in that. As to the threat, he did not remember anything of the kind. Several firms had been written to in the sense that they might use the patents of this firm by paying a small royalty, but that was all a matter of business.

Col. Rathbone—I have here a letter, under date July 10, 1874, in which you state that unless our firm respected your rights, as you called them, you would take the necessary legal steps to assert them.

Mr. Perry could see no crime in that. It was not a threat to the firm of Rathbone, Sard & Co., nor could it be so construed on impartial inspection. It was simply referring to legally constituted authorities questions which the parties themselves could not settle. He did not think that such action would be a bar to friendship. On the contrary, it would dispose finally of unpleasant business disputes. Was that censurable? He had heartily supported the organization and its objects, but did not believe that it would interfere with the individual rights of any of its members.

The motion to spread the address on the records was then put and carried.

ELECTION OF OFFICERS.

Mr. W. P. Warren moved that the Association proceed to ballot for President, the first ballot to be informal. Carried.

Messrs. Cubben, of Chicago, and Burdick, of Albany, were appointed tellers.

The informal ballot, which included all members present, individually, was then taken with the following result: Whole number of votes cast, 45; S. S. Jewett, 27; J. S. Perry, 10; W. H. Tefft, 2; G. F. Filley, 4; R. P. Meyers, 1; J. F. Rathbone, 1.

Mr. Grange Sard, of Chicago, moved to proceed to a formal ballot, each firm only being entitled to a vote, which prevailed. The result was as follows:

Whole number of votes cast, 39; necessary to a choice, 20; S. S. Jewett, 31; C. Olhaber, 5; J. S. Perry, 2; S. H. Ransom, 1.

Col. Rathbone moved to make the nomination unanimous, which was seconded by Mr. J. S. Perry, who made a brief speech eulogistic of Mr. Jewett, who was, he said, just the man that should have been elected.

Mr. Grange Sard, of Chicago, moved that the Chair be instructed to telegraph to Mr. Jewett, of Buffalo, the news of his election, which was agreed to.

It was resolved to elect two Vice-Presidents and a Treasurer on the same vote. The following gentlemen were elected: First Vice-President, G. F. Filley; Second Vice-President, W. H. Tefft; Treasurer, A. Brauley.

Col. W. P. Warren moved the appointment of a committee to nominate a Board of Managers, which prevailed.

The Chairman appointed on the committee J. F. Rathbone, W. P. Warren, A. Bradley, N. B. Perry, and R. P. Meyers.

The committee, after deliberation, reported and recommended the following Board of Managers, which was confirmed: J. W. Fuller, Troy, N. Y.; R. P. Meyers, Cleveland; C. Olhaber, Cincinnati; N. A. Boynton, New York city; Miles Pratt, Boston.

The Secretary was instructed to cast a ballot for the gentlemen named, and the election was declared unanimous.

Mr. J. Jewett, of Chicago, called attention to the fact that funds were needed for current expenses, and moved an assessment of $10 each on the members, to be paid before the Convention adjourned. Carried.

SUBJECTS FOR DISCUSSION.

Mr. C. O. Green, Secretary of the Special Committee, appointed at the morning session, made the following report:

Your committee, to whom was referred the duty of devising and preparing business for the consideration of your Convention, beg leave to report the following subjects as worthy of your deliberation and action, viz.:

First—Your committee would call to your notice the question of guarantees exacted by the retail dealers throughout the country from manufacturers relative to the breakage of castings. Your committee are fully satisfied that the persistent claims made upon our trade for castings to be furnished, free of cost, upon the simple demand of the retail dealer, and under whatever pretext, has become burdensome and oppressive, and your committee respectfully recommend that in future all guarantees of this character be wholly discontinued.

Second—Your committee respectfully beg leave to call your attention to the consideration of terms and discounts, and suggest that the following rule of terms and discounts be recommended by your Convention to the trade generally, viz.: Time given on all goods of our manufacture not to exceed ninety days, payable by note at bank with exchange, subject, at the option of the buyer, however, to a discount for cash at 1 per cent. per month, if payment is made within thirty days.

Third—Your Committee beg leave to suggest that, during the sitting of your Convention, an hour shall be named when the Convention shall go into executive session, at which all members of the Convention in attendance shall be requested to be present for the consideration of subjects pertaining to the interests of the trade deemed private in their character.

Fourth—Your Committe would respectfully suggest the consideration of the question of prices of the various classes of cooking and heating stoves, together with the prices per pound to be charged during the present year for repair-castings. Your Committee deem this the all important subject for your Convention to consider at this time, knowing, as we do, the interest existing regarding the recommendations of your Convention, not only among the stove manufacturers of this country, but the retail stove dealers generally.

Fifth—Your Committee desire to urge upon the Convention the great importance of procuring the passage of a law by the Congress of the United States for the protection of the trade against those persons who take our castings, and file and fit the same for the purpose of making duplicates therefrom, and supplying the retail trade in the various towns and cities of this country at prices far below the cost of such castings in our own foundries. Every member of the Convention must see and feel the great importance of an effort upon the part of not only the Convention, but of every member of the organization throughout the country, to put an end to this unwarrantable confiscation of our rights as manufacturers and dealers.

Sixth—Your Committee would also, and finally, suggest the propriety of determining upon the city in which the next meeting of the Association shall be held.

The report was accepted, and the matters therein named will come before the Association for discussion to-day.

AN INVITATION.

Grange Sard, Jr., on behalf of the Chicago delegates, invited the members of the Association to take a carriage ride around the city, commencing at 3 o'clock p. m., to wind up with a banquet at the Grand Pacific. Accepted.

Mr. S. H. Perry, of Troy, N. Y., moved the appointment of a Committee on Prices, to report during the session of this day, which prevailed, and the Chair appointed as such Committee, Messrs. Perry, Galway, Meyers, Lake, Jewett, Bradley, Bell, and Ransom.

Adjourned until 10 o'clock next morning.

THURSDAY'S SESSION.

The Association was called to order at 10:30 a. m., Mr. W. H. Tefft, vice president, in the chair. Mr. John S. Perry rose to a question of privilege, and asked the Association to be allowed to read a few remarks. Permission being granted, the gentleman proceeded as follows:

In respect to the ill-timed assault made upon me yesterday by Gen. Rathbone, I have nothing further to say, though there is much more that can be said, at a proper time and in a proper place.

After our adjournment last evening I was informed that in a furious tirade made upon me at the morning session by that gentleman, in my absence, he had stated that I caused an order of the Court to be served upon Mr. Samuel H. Ransom at a time to prevent his attending this Convention. Did any of you gentlemen believe this statement? Has my intercourse with you been of that character to lead you to accept such a charge without the strongest proofs?

Can any one of you say that I have ever been guilty of a mean action? To have done what has been charged upon me would have been a very mean action, as well as a very foolish action. Whatever the merit of the case may be, I hope you think that I have more common sense at least than to be guilty of it.

I pronounce the charge unqualifiedly false in every particular, and I call upon Gen. Rathbone here and now to state the evidences upon which he made it.

Gen. Rathbone responded that he had made the charges upon the authority of S. H. Ransom, and in his words. He then proceeded to reiterate his statement, and said that Ransom had expressed to him the belief that Mr. Perry had caused the subpœna to be served upon him in order to prevent his attendance at the Convention. Mr. Ransom was the trustee of an association of manufacturers, organized for the protection of their rights, and it was to be extremely regretted that he was not present, as he would have been, had it not been for the unjustifiable and unwarrantable proceeding of Perry & Co. Gen. Rathbone asked Mr. Perry if he had known of the service of the subpœna on Mr. Ransom before he (Perry) hadleft Albany to attend the Convention.

Mr. Perry declined to answer the question immediately, but said that he would do so before he got through with his remarks.

Gen. Rathbone proceeded to say that he had not made any assault upon Mr. Perry, and asked the gentlemen of the Convention to bear witness that in his remarks he had not transcended the rules of propriety, or been guilty of indecorous personalities. What he had said had been upon the authority of Mr. Ransom himself, and he had only characterized the conduct of Perry & Co. in moderate and suitable terms.

Mr. Perry responded that the main statements made by Gen. Rathbone were true, but that they did not meet the case. He then proceeded with his written explanation, as follows:

Now, what are the facts. The combination of wealthy firms formed, it is said, to destroy patents upon stoves.

Here the speaker was called to order by Gen. Rathbone, who claimed that he was not speaking to a question of privilege.

Mr. Perry stated that what he had just said, and what would immediately follow, was necessary to his explanation, and, without further objection, he was allowed to continue his remarks, as follows:

They commenced their operations by purchasing a patent of one Elihu Smith, for which they paid $10,000. The next step was for their attorney, Thomas S. Sprague, Esq., to address letters to some of the customers of Perry & Co., by direction of Mr. Ransom, trustee, warning them that the Argand stove was an infringement of the Smith patent, requesting them to report their sales, to pay the royalties due, and take a license under penalty of a suit.

Could Perry & Co. allow their trade to be thus interfered with? Were they wrong in attempting to protect themselves against this assault? These letters were written, I think, early in December—they were sent immediately to the firm. They were placed in the hands of their attorney, Judge John H. Reynolds, of Albany, I think about the 20th of December, with directions to inquire of Mr. Ransom if they were written by his authority. Judge Reynolds addressed two letters to him, of neither of which was any notice taken. I then directed him to commence a suit for interfering with our private business. This must have been at least six weeks since. From that time to the present there has very little passed between Judge Reynolds and myself on the subject. My occupations were so absorbing and continuous that I scarcely gave it a thought. I had not seen Judge Reynolds for at least ten days previous to my leaving town. Shortly before this, on Monday last, I had an interview of perhaps five minutes with him, upon matters entirely foreign to this question, during which he told me that such an order had been obtained. I greatly regretted that it had not been delayed until after the meeting of this convention, but it was then too late, and I had not time to give the matter a moment's thought. I regret more than words can express that it should have taken place. Mr. Ransom is a man for whom I entertain the highest respect and regard. I have a personal liking for him, and, I assure you, General, he is one of the last men toward whom I would do an incivility.

If my statement thus made requires any corroboration with any member of this Association, which I trust it does not, I refer them to Judge Reynolds as to the truth.

Mr. Perry added to his written remarks, in response to the inquiry of Gen. Rathbone, that he had obtained through Judge Reynolds a knowledge of the service of the subpœna upon Mr. Ransom, but stated that, in the hurry and rush of business and multifarious duties, the matter had entirely slipped his memory.

Gen. Rathbone said that Mr. Ransom was through and through a gentleman, whose word needed no indorsement, but if it did, he (the speaker) stood ready to indorse it. He thought there was no excuse for Mr. Perry's strange forgetfulness in such a matter, and that Mr. Perry was censurable for not having sent word to Mr. Ransom in order that that gentleman could have come upon the same train with Mr. Perry to the Convention.

Mr. Galloway, of Cincinnati, thought this personal discussion had proceeded far enough, and suggested the propriety of the convention going on with its business.

Long before the discussion had reached this point, it became evident that the Association had had enough of what had become largely a personal dispute, and without any formal action the matter was dropped, upon a motion of Mr. W. P. Warren, to take up the

REPORT OF THE BUSINESS COMMITTEE.

The first section of the report of the committee, published above, having reference to stove breakages and guarantees therefor to retail dealers, the latter system being condemned, was adopted.

Action on the second section was deferred because the same matter fell within the province of the Committee on Prices.

Sec. 3, relative to the secret session, was adopted as published.

Sec. 4 was considered practically adopted by the appointment on the previous evening of a Committee on Prices.

Sec. 5, referring to the passage of a law by Congress to protect the trade in the matter of persons who illegally take stove-castings and use them as their own, was referred to the Executive Committee.

Mr. Perry stated that the matter had been referred at a previous convention to Messrs. Pratt, of Boston, Eddy, of Troy, and McDonnell, of Philadelphia, for the purpose of making a report upon the subject. Mr. Pratt had visited Washington, but no report had yet been made.

Sec. 6, relating to place of holding future meeting, was adopted.

Mr. Grange Sard gave notice of an

AMENDMENT TO THE CONSTITUTION,

providing for the holding of one annual meeting on the second Wednesday of February of each year, but also providing that the President might call a special meeting at any time, at the request of the Board of Managers; and further providing that twenty-one members should constitute a quorum at any meeting of the convention.

Messrs. Filley and Olhaber opposed the amendment, which was not very strongly supported by Mr. Sard himself, who said that he had introduced the matter simply to get the sense of the meeting. The amendment was put to vote, and unanimously lost.

THE NEXT MEETING.

The Convention then proceeded to consider the place of the next meeting in June.

Mr. Anthony, of Detroit, moved that the Convention be held in that place.

Mr. Filley, of St. Louis, of course, supported that city.

Mr. Olhaber asked what sized rooms they had in the St. Louis hotels. At Long Branch, his friend, Mr. Bradley, complained the rooms were so small that when a man got drunk there was not sufficient room for him to fall on the floor.

Mr. Meyers said that Olhaber was speaking for himself, because in a small apartment there certainly was no room for Olhaber either to fall down or lie down. [Laughter.] He preferred the fair city of Cleveland. The matter was discussed at some length, and finally St. Louis was determined upon.

THE PRESIDENT ELECT.

President Tefft then read the following dispatch from President-elect, S. S. Jewett:

William H. Tefft, Chairman:

BUFFALO, N. Y., Feb. 11.—I have the honor to acknowledge the receipt of your dispatch announcing my unanimous election as President of the National Association of Stove-Manufacturers. Believing a continuation of the association, embracing so much ability, and representing so large an amount of capital, can accomplish much to the mutual advantage of consumers, dealers and manufacturers of stoves, I cheerfully accept, though with much diffidence. I tender my thanks to the association for this distinguished honor. S. S. JEWETT.

Mr. Josiah Jewett, from the Committee on Prices, submitted the following report, which was unanimously adopted:

Your committee have carefully considered the subject referred to them, and recommend the adoption of the following basis of prices:

The price on common stoves to be	6¼c.
For the medium class	7 c.
For the first class	8 c.
For odd plates	8 c.

with a suitable amount added for plated knobs, reservoirs and other extras.

Terms: Four months, with settlement by note on receipt of invoice, or 5 per cent. discount for cash.

Col. W. P. Warren gave notice of an amendment to Art. III. of the Constitution, providing that at the annual meeting, the association shall elect a Secretary. He also presented an amendment to the by-laws, providing for the appointment of an Assistant Secretary, whose compensation for services should be determined by the Convention, which was adopted.

THE CENTENNIAL.

Mr. C. Olhaber, from the Centennial Committee, reported that they did not deem it practicable that the Association, as such, should make a display, but recommended that the stove manufacturers of the United States should make the best display they could.

Mr. Anthony, of Detroit, thought that the Association, as such, should make a display, and take charge of the place allotted to the trade.

Mr. Olhaber thought it would be impracticable to do anything of the kind, for the committee could hardly assume the responsibility of allotting space to the different exhibitors.

Mr. Filley, of St. Louis, said that whatever exhibition was made, he should like to see the stoves as they left the hands of the manufacturers—not trimmed and polished up for the purpose of obtaining exhibition prizes.

Mr. Olhaber said that was a matter for the individual exhibitors to consider with the managers of the Centennial. He did not believe the latter would throw a stove out-doors, even were it silver plated and brass mounted.

Mr. N. A. Boynton favored the ornamentation of stoves to the highest pitch. It tended to cultivate an artistic taste in the minds of the people.

Col. Rathbone favored both the entirely utilitarian and the ornamental. An exhibition of both would do no harm.

Mr. Cribben expressed the hope that when silver plated stoves were exhibited, European visitors would not consider that they were generally used in the United States.

Mr. Olhaber hoped the contrary, for that would be about the only tangible evidence of an intention to return to specie payments. [Laughter.]

After some more discussion, it was resolved to refer for information to the Director-General of the Centennial.

Mr. S. W. Perry moved that the official publication of the proceedings of the Convention be left to the discretionary power of the President elect. Carried.

Mr. J. S. Perry, ex-President, said that he would much like to supervise the publication of the report, so far as related to his address or matters personal to himself.

Col. W. P. Warren objected on the ground that they had just conferred that power on the President of the Association.

The Chairman stated that he thought there would be no trouble in the matter, which satisfied Mr. Perry.

THANKS.

Col. W. P. Warren introduced the following resolution, which was unanimously adopted without debate:

Resolved, That the thanks of the Association be tendered to J. S. Perry, for the able manner in which he has performed his duties for the last three years.

Treasurer Bradley then submitted a report, which was approved.

Mr. Bowditch offered a resolution of thanks to the press and to the Palmer House, which was unanimously adopted.

There being no further business of a public nature before the Convention, it was resolved to go into secret executive session, C. Olhaber in the chair. They were in session about an hour, discussing matters of private interest to the trade, after which the Convention adjourned to meet in St. Louis next June.

During the afternoon the delegates had a sleigh ride, and in the evening they banqueted at the Pacific.

Tests of American Iron and Steel.

The following memorial has been presented to Congress:

To the Honorable, the Senate and House of Representatives of the United States of America, in Congress assembled:

The undersigned, secretary of a committee duly appointed in accordance with the following resolution, passed by the American Society of Civil Engineers, in convention assembled at Chicago, Illinois, June 6, 1872:

"WHEREAS, American engineers are now mainly dependent upon formulæ for the calculation of the strength of different forms of iron and steel, not based on experiments upon American materials and manufacture; and

"WHEREAS, These differ greatly in many of their characteristics from those of foreign production, both in their nature and forms; therefore

"*Resolved*, That a committee of five be appointed to urge upon the United States government the importance of a thorough and complete series of tests of American iron and steel, and the great value of formulæ to be deducted from such experiments."

As memoralist respectfully represents, that this committee in the discharge of the duty imposed by the foregoing resolution, would set forth facts and considerations in relation to the uncertainties connected with the manufacture and use of iron and steel in the United States, as follows—from which it is earnestly hoped that the importance of the experiments proposed, and the value of the formulæ to be deducted from them, may be apparent.

Iron and steel are now used for so many purposes, which they serve so much better than any other available materials, that not only the comfort and convenience of the people but the safety of life and property depends greatly on a correct knowledge and a proper use of them. So intimately are these metals associated with nearly all the most valuable industries, that their consumption by a community has become at once a means and a measure of its civilization.

As the uses of iron and steel have multiplied and extended, so also have the processes by which they are made and wrought become more varied and intricate, and the forms they are caused to assume, more numerous and complex. Many of these forms and processes are new; the results in this country have not been so tested and reported as to give the mechanic, the architect and the engineer the accurate knowledge of strength and other characteristics which is indispensable to judicious use. The variation in quantity of those materials, as made and sold, is due to so many causes, that only an exhaustive series of experiments can determine the different characteristics and reveal the conditions which produce them.

Among the most obvious of these causes may be mentioned the kinds and mixtures of the ores and fuel employed and the different methods of their treatment in the production of pig metal. These in the United States are unlike those of other iron producing countries. The products of the several methods of making iron and steel also differ in their qualities. But it is only where iron and steel have been wrought into shapes required in actual use, that the peculiar characteristics of each are fixed and established. They are melted, cast, hammered and rolled, chilled, tempered, case hardened and annealed—welded, upset, drawn, bent and twisted, planed, turned, drilled, sheared, punched and riveted, and are otherwise variously tortured in the process of manufacture and use; they are worked into a great variety of shapes and dimensions, instanced by the finest needle and the enormous shafts and bed plates of the largest marine engines.

Yet, strange as it may appear, American engineers, architects, manufacturers and mechanics are dependent for the calculation of the strength of iron and steel in most of the forms used, on English formulæ, deduced from experiments upon English materials exclusively, although it is well known that domestic iron and steel, as actually employed, differ so greatly from foreign, that such formulæ give, at best, but rudely approximate results.

In the United States, no comprehensive series of tests have been made, or rules determined, by a competent and disinterested authority which can be accepted without caution in computing the strength of these American materials. Therefore it is not strange that accidents resulting from the breaking of parts of machinery, the failure of bridges, or the fall of buildings constantly take place, sometimes with great lost of life and property. It is more remarkable that such are not more common.

No one individual or company can well afford to provide the expensive machinery required to test the parts of iron structures of full size, and if the machinery were supplied, these parts are too costly for individuals or companies to destroy in making tests, and the statements of results thus obtained would not be received with entire confidence. Often from the behavior of small pieces under test, an analogy is traced and accepted, which may or may not exist. In certain cases, manufacturing companies do test pieces of the full sizes used. Valuable experiments are also sometimes made by individuals or corporations preparatory to the erection of very important works.

Such tests of iron and steel have been made by the Engineer and Ordnance Corps of the United States Army, which, by the accomplished officers of these corps, are usually in progress; the value of the results obtained is recognized and appreciated, but the means employed in the varied and disconnected efforts are inadequate, and the facts developed and rules derived from them have not been so collated and reduced as to be accessible to the general public.

It is further respectfully set forth, that it will require a very considerable expenditure of money to provide a place and machinery suitable to make an exhaustive set of tests of American iron and steel and of other materials, as stone and wood, which enter largely into construction. The service of able, scientific and practical men will be required, and years of time must be spent by them in the investigations now so urgently needed.

In most of the iron producing countries of the world, tests, more or less thorough, of the qualities of iron and steel there produced have been made—so that not only are the people of each country well advised as to the correct use of their materials, but the qualities of such are, at the same time, made known throughout the world, and thereby, in every instance, the national wealth has been largely augmented.

The commission appointed in 1847 by the British government to inquire into the application of iron to railway structures, spent two years in investigation, and made a report which has ever since been the basis of practice in the use of iron for railway purposes, not only in England, but almost in the whole civilized world. In France the government has shown marked interest in encouraging engineers, manufacturers and others to test all materials that enter into construction, by permitting such tests to be made at national cost at the various schools of instruction which are supported by the State. The value of these impartial examinations into the strength and constituents of materials officially certified to, cannot be over-estimated. The various tables of strength of materials by Mons. Tresca and others are well known. In other countries on the Continent of Europe, much, from time to time, has been done in this direction under government supervision or by State aid, though not so regularly as in France.

In countries where such thorough investigations have been made, and the results given to the public—any great mistakes in the application of the materials tested are without excuse. But in the United States, through want of the precise knowledge which the experiments will develop that your memorialist earnestly asks shall be made, even natural constructive talent of a high order is frequently at fault, and the result is either excess and consequent waste of material, or, what is still more disastrous, weakness in parts where strength is essential.

It is more than probable that our government itself, as a large consumer of iron and steel, wastes, in over-sizes and ill-proportioned forms, enough iron and steel annually to defray the entire expenses of the investigations asked; while it is not at all certain that public buildings and machinery are as safe as they might be made at less expense, with the thorough knowledge of the materials employed in their construction, which, it is respectfully urged, is the duty of the government to obtain.

For the Committee:

WILLIAM SOOY SMITH,
Maywood, Illinois.
JOHN G. BARNARD,
Corps of Engineers, U. S. A., New York.
JAMES B. EADS,
St. Louis, Missouri.
ALBERT FINK,
Louisville, Kentucky.
GEORGE B. MCCLELLAN,
New York.
ROBERT H. THURSTON,
Hoboken, New Jersey.
CHARLES B. RICHARDS,
Hartford, Connecticut.
OTHO E. MICHAELS,
Ordinance Corps, U. S. A., Pittsburgh, Pa.
By G. LEVERICH, Secretary.

A Wonderful Automaton.

Automaton figures, imitating by mechanism the movements of life, have been marvels of invention in many ages. In the old classic times, one most wonderful automaton was the flying pigeon made by Archytas, of Tarentum. Another was the walking statue of Dœdalus. In the middle ages there was the speaking head of brass, made by Pope Sylvester. There was the moving and speaking head of Albertus Magnus. There was the mechanical fly of Bishop Virgilius. In later times the most wonderful automaton in the world was, at one period, the flying eagle of Johann Muller, or the crawling steel fly of the same mechanician; at another period the artificial man of Reysolius, and, at another, the miniature chariot, horses, lady and suite, of Mons. Camus. In the last century, the greatest wonders in this class of mechanism were Vaucanson's automaton flute player, which performed with correctness of execution and with clear good tones, certain airs which it was constructed to play, and Vaucanson's automaton duck, which preened its wings, quacked, ate, drank and digested its food. Late in the last and early in the present century, the most wonderful automaton was Kempelen's famous chess player, which was apparently intelligent, so that it could move any of the pieces at will and in any way, according to the play of the adversary; a very different thing from simply executing a series of motions for which the machinery is purposely arranged. However, that automaton turned out to be a deception, and the playing was really accomplished by a man inside—a Polish patriot named Worousky, who, having lost both his legs in battle, was thus enabled to conceal himself in different parts of the figure while the mechanism was being examined by the public. Another wonder was the invisible girl of Mons. Charles, in which questions were heard and answered through trumpets, apparently suspended out of any communication with a living person. Another was the writing and drawing automaton of Mons. Maillardet; another the marvelous little piping bullfinch, constructed by the same inventor; and another was the automaton peacock of Le Droz. The French conjuror, Mons. Robert Houdin, made an automaton harlequin, which performed antics in and out of a small box, blew a whistle, and smoked a cigarette. Prof. Pepper constructed at the Polytechnic Institution, an automaton Leotard, which tumbled and postured upon a swinging trapeze. A conjuror named Beaumont improved upon this, by making a large doll vault upon a swinging rope, and after holding by its hands, disengage them from the rope without assistance and then hang by its feet. The latest wonder of this kind is an automaton card player, the joint invention of Mr. John Nevil Maskelyne and Mr. John Algernon Clarke, brought out in "Maskelyne & Cooke's entertainment" at the Egyptian Hall, in London. This figure, representing a man in oriental costume, seated cross-legged upon a small pedestal, with cards arranged in front of it, plays whist and other games, itself choosing and taking up with its thumb and finger any card it intends to play. It also tells any card selected out of a pack by the audience; replies to questions by striking a bell; obeys by its movements the direction of any person in the audience; can instantly show any color called for by any person present; can work any sum in addition, subtraction, multiplication or division; and, in short, execute an extraordinary number and variety of feats, evidently demanding intelligence as well as complicated and ingenious mechanism. The peculiar feature of this automaton is, that it apparently effects all this without the possibility of its receiving any assistance or guidance from without. It is supported upon a single piece of thin transparent glass; and persons from the audience may stand all round it while it is at work, and may see inside the body of the figure and the pedestal.

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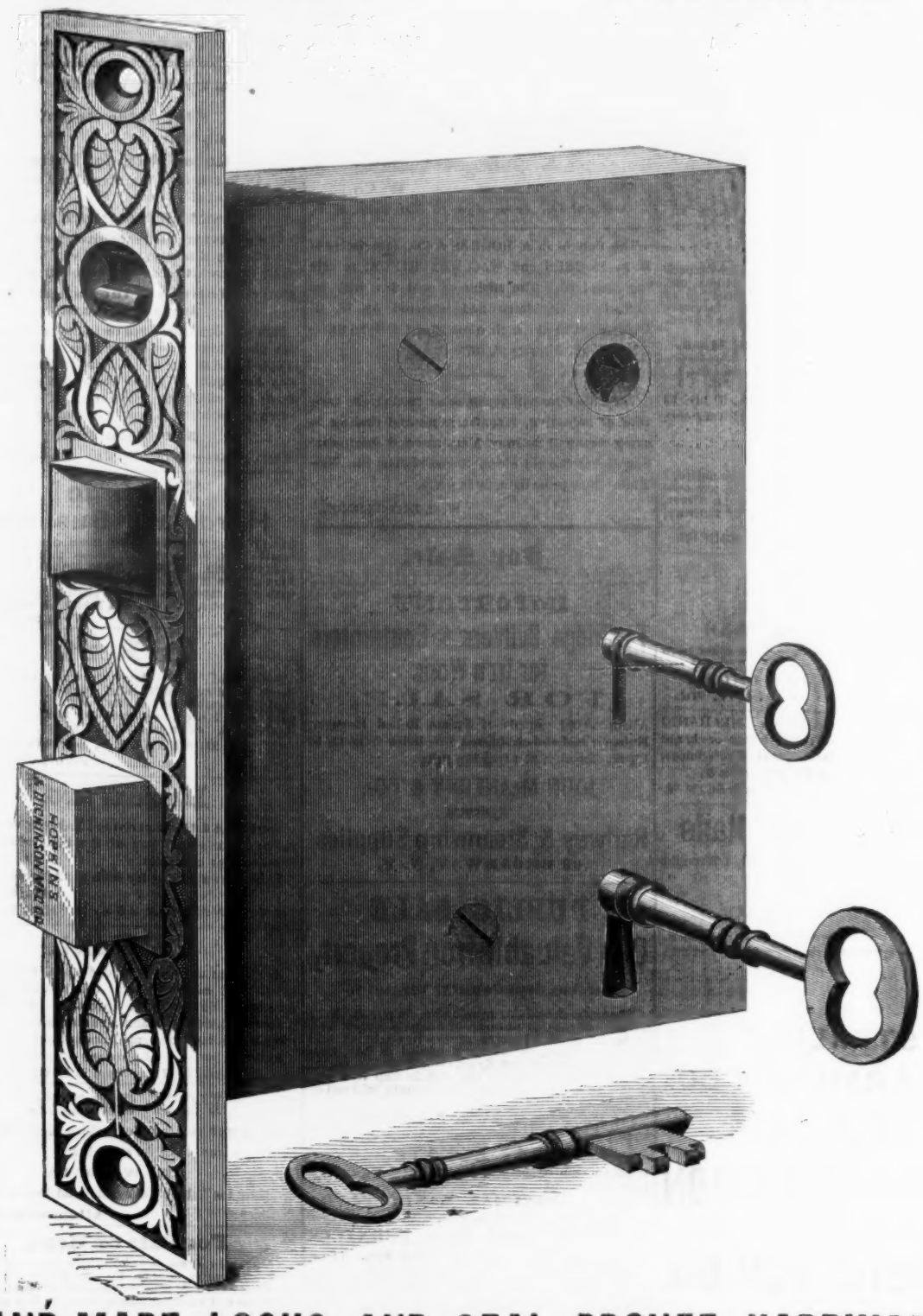

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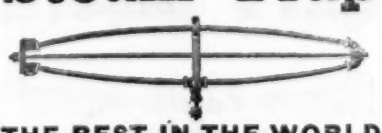

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Recent Improvements in English Iron Manufacturing Plant.

We take the following from an elaborate review of engineering progress in 1874, in the *Engineer*:

As regards the work of the mechanical engineer in connection with the manufacture of iron, something has to be recorded. While the Danks process has not been generally successful in the North of England, it is a noteworthy fact that in North Staffordshire the system is not found fault with. On the contrary, it is there spoken of with more satisfaction as the year closes than at any previous time. During most of the twelvemonth there has been a plant of six Danks' furnaces at the Ravensdale Iron Works, of Messrs. Heath & Sons. This plant is now being increased to ten furnaces. Early in September the mill and forge managers of South Staffordshire went to the Ravensdale Works to see what was being done. These practical men pronounced the quality of iron produced by the rotary furnace as much superior to that which could be obtained from the similar pig iron by the hand furnaces. Exclusively North Staffordshire pig was melted, and it was thrown cold into the furnace. Nowhere in this country is the process to be seen to greater advantage than in North Staffordshire. Those arrangements will be facilitated by the adaptation of the reversing principle to the rolls at which the slabs, when removed from the steam hammer, are broken down to puddled bars. At the Ravensdale Works the puddled bar is converted into merchant iron, hoops and boiler plates of best North Staffordshire quality. While the puddling of iron by the Danks process is, at Messrs. Hopkins, Gilkes & Co.'s works, costing £1 a ton more than it costs to puddle iron by the old hand process at the same place, it is only fair to state here that Mr. Heath believes that he, on the contrary, largely saves by the Danks process as compared with hand puddling. He gets a far greater yield and a better quality, and he is satisfied that he is working the system at a profit. Attention is being given to improvements in the Danks plant in the North of England, where at Messrs. Hopkins, Gilkes & Co.'s establishment, Mr. Lester, the forge manager, has adopted a water bosh instead of the peculiarly shaped and expensive fire-box, which forms the fire bridge of the combustion chamber; and the bosh is working very successfully. At the same place a better method than that before adopted for facilitating the watering of the conical ends of the rotary chamber has been effected. By its being made possible to use a larger stream of water around the ends than has heretofore been practicable, the very thin fettling of the neck of the furnace is destroyed less quickly, at the same time that the abrasion rings are kept cooler.

At the Tudhoe Works, in the North of England, where the double puddling furnaces are furnished with Griffiths' stirring machinery, which has been made to supplant that of Dormoy, but where the Casson-Dormoy furnace is in use, experiments are being made to melt and partially refine the pig iron between the furnace and the stack. Mr. Casson Smith, at the Round Oak Works of the Earl of Dudley, is continuing to use with much success the Casson-Dormoy furnace there, and he is beginning to use gas as a fuel at the same works under circumstances which promise much success.

Sir J. G. Alleyne, of the Butterley Iron Works, Alfreton, must have watched with more than usual interest what was being done with the Danks process at the Ravensdale Works—for he had just before patented some improvements in apparatus for making iron. The invention relates to puddling furnaces of the kind having a rotating bottom of basin form, and to rabbles to be used in connection therewith. The basin is formed with a double bottom, and supported on a tubular shaft. A pipe extends up this shaft, conveying water to jets in the space between the two bottoms, which jets play on the under surface of the upper bottom to keep it cool, the water flowing down the tubular shaft to an outlet at the bottom. The rabble consists of a stem, with a number of tines projecting down from it into the fused metal in the basin. The basin has either a reciprocating or a rotary motion imparted to it for more effectually stirring the fused metal.

Messrs. S. Newton, of Dudley, and C. Newton, of West Bromwich, have also during the year patented an improved puddling furnace, to be used in the manufacture of iron and steel. The peculiarity consists in forming in the bed or bed-plates of the furnace a continuous channel, by preference of a zig-zag figure, through which a current of water is passed, which water, by its cooling effect, keeps the bed of the furnace at so low a temperature that it suffers little injury from the heat of the furnace. The cast iron plates forming the bed have imbedded in them wrought iron pipes of a U figure, or pipe-like cavities of the same figure are made in the plates by the casting process. The ends of the pipes, or cavities, are connected together by junction pieces, so as to form a continuous channel in the bed of the furnace for the cooling water to pass through.

Mr. C. W. Siemens has given his attention to the shingling and compressing of puddled bars, upon which so much depends as to the quality of the iron or the steel when made into the finished article; and he has recently patented a method of doing this by the operation of hydraulic rams upon the iron in a horizontal or radial direction as the ball lies upon a turn table. When the ball is squeezed all round, it is operated upon vertically by a ram or screw head, at the same time that the rams are advanced with a higher degree of pressure.

There has been only little done that is new during the year as to blast furnaces. That which has had the advantage of experiment has been adopted in the furnaces that have been newly erected, or in those which have been increased in size. Mr. W. A. Little, of Hammersmith, has taken out a patent for the incorporation of the ore fluxing materials and the carbonaceous matter, all in a powdered state, and their consolidation into solid masses by means of hydraulic cement, in the manner usually pursued in the making of builder's concrete or mortar. This he interstratifies with fuel in the ordinary smelting furnace, and he employs a fuel chamber external to the smelting furnace, with an opening into the throat of the furnace opposite to the nozzle of the blast pipe, in order that coal dust or other fuel may be used to supply heat at this point in quantity easily subjected to regulation. He likewise proposes to provide this fuel chamber with a hopper head and alarm trying rod to ring a bell and warn the stoker that more fuel is wanted.

Mr. Henry Aitken, of Falkirk, has drawn attention to the collecting and recovering of blast furnaces and cupola products; and Messrs. Head, Wrightson & Co., of Stockton-on-Tees, have made progress with their new form of wagon-drop for blast furnaces. The North Lincolnshire Iron Company, Frodingham, have set up one of these hydraulic lifts with simple and economical supports of brickwork.

London Fires in 1874.—We learn from Captain Shaw's annual report, just issued, that the number of calls for fires, or supposed fires, received during the year has been 1750. Of these, 89 were false alarms, 88 proved to be only chimney alarms, and 1573 were calls for fires, of which 154 resulted in serious damage, and 1419 in slight damage. The fires of 1874, compared with those of 1873, show an increase of 25; but, compared with the average of the last ten years, there is a decrease of 6. The proportion of serious to slight losses in 1874—154 to 1419—is about as favorable as hitherto. The number of fires in the metropolis in which life has been seriously endangered during the year 1874 has been 73; and the number of these in which life has been lost has been 19. The number of persons seriously endangered by fire has been 157, of whom 134 were saved, and 23 lost their lives. Of the 23 lost, 13 were taken out alive, but died afterward in hospitals or elsewhere, and 10 were suffocated or burned to death. The number of journeys made by the fire engines of the 49 stations has been 6872, and the total distance run has been 21,181 miles. The quantity of water used for extinguishing fires in the metropolis during the year has been 16,579,295 gallons; in round numbers a little more than 16½ million gallons, or about 74,000 tons. Of this quantity 18,931 tons, or about a fourth of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes. During the year there have been 6 cases of short supply of water, 24 of late attendance of turncocks, and 14 of no attendance, making altogether 47 cases in which the water arrangements were unsatisfactory. The strength of the brigade at present is as follows: 49 fire engine stations; 106 fire escape stations; 4 floating stations; 54 telegraph lines; 86 miles of telegraph lines; 3 floating steam fire engines; 1 iron barge, to carry a land steam fire engine; 5 large land steam fire engines; 21 small land steam fire engines; 14 7 in. manual fire engines; 59 6 in. manual fire engines; 12 under 6 in. manual fire engines; 129 fire escapes; 395 firemen, including the chief officer, the superintendents, and all ranks. The number of firemen employed on the several watches kept up throughout the metropolis is at present 108 by day, and 181 by night, making a total of 289 in every 24 hours.

Special Notices.

First Spring Trade Sale

Hardware, Cutlery, &c.,

For 1875.

Messrs. Bissell, Welles & Millet,

AUCTIONEERS, will hold on

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At their new sale-room, No. 15 Murray Street, near Broadway, a large and attractive sale of

Hardware, Cutlery, French Tinned Ware, Guns, &c., &c.

To which the attention of buyers is invited.

This sale will embrace about 2000 lots of desirable goods, and will comprise a large assortment of all the various kinds of Hardware, Cutlery, &c.

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For the sale of Hardware or any Mercantile Business. Parties desirous of going it to business cannot do better than to address this agency. Also clerkships secured, best of reference required. Parties wishing clerks or assistants, please address this agency. Hardware stores for sale and wanted. Stamp inclosed insures answer.

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HARDWARE.

FOR SALE in the best business part of Jersey City, a first-class *Tool* and *Hardware* business. Established about 25 years, and doing a fair business.

Apply to *H. LUTIGEN,*
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Special Notices.

SPECIAL NOTICE.

I have three patents for Dies, Machinery, and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1865; January 31, 1866, and July 3, 1866. **There is a special claim on each of the Dies.** All persons infringing on said patents will be held responsible to the extent of the law. **Russell Jennings.**

DEEP RIVER, Conn., Sept. 7, 1874.

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OFFICE OF H. A. ROGERS, 19 JOHN ST., NEW YORK, January 20th, 1875.

The Firm of H. A. ROGERS & CO., 50 and 52 John Street, is this day dissolved by mutual consent, H. A. Rogers retiring.

NEW YORK, January 18, 1875.

In calling your attention to the above notice, I beg to say that I will continue business in my own name and for my own account at No 19 John Street, where may be found a complete stock of Railway, Mill and Machinists' Supplies.

H. A. ROGERS.

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A first-class experienced

Traveling Salesman

in a Hardware Commission House. No other need apply. Address

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A THOROUGH PRACTICAL MECHANIC wants a situation as draughtsman or charge of a machine shop. Can give the best of references. Address *ENGINEER, Box 5,*
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Wanted in exchange for 300 tons No. 1 Wrought Scrap Iron.

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Dealers in

Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass.

Cash paid for allkinds of **Metals** and **Tools.**

Wanted,

A situation as bookkeeper or cashier of an iron works, a hardware business, or in the coal trade, which the advertiser understands in all its branches. Highest references of character, capacity, &c.

Address, **H. D.,**
Office of *The Iron Age*, 10 Warren St., N. Y.

Wanted,

By an experienced man, who has a large acquaintance with the wholesale and retail hardware and house-furnishing merchants thoughout the West, a position as traveling salesman. Can furnish good city references. Address, **P. A. C.,**
Office of The Iron Age, 10 Warren St., N. Y.

Special Notices.

Partner Wanted in a Large Machine Shop and Foundry.

A rare chance for purchasing a part of or whole half interest in the oldest engineering, mechanical and manufacturing establishment in the South.

The shops are the largest south of the Ohio river, and situated in one of the rapidly increasing towns of Tennessee, and in the midst of the coal, iron and mining districts, fully equipped with the latest improved and most valuable machinery, largely stocked, running full time, with a good business established. Cash capital required, $30,000 to $40,000.

Address, in first instance, **W. C.,**
Office of *The Iron Age*, 10 Warren St., N. Y.

The firm of H. A. ROGERS & CO. (consisting of H. A. ROGERS and W. C. DUYCKINCK) is this day dissolved. The affairs of said firm will be exclusively liquidated and adjusted by W. C. DUYCKINCK, at the old store 50 and 52 John St.

New York, January 18, 1875.

The subscriber will continue to conduct the business of importing, manufacturing and dealing in every variety of Railway, Machinist and Engineers' Supplies at the old store, 50 and 52 John St., New York. New price list now in press.

W. C. DUYCKINCK.

For Sale.

IMPORTANT

To Bridge Builders & Contractors for Iron Work.

FOR SALE,

About 20,000 pounds of Patent Rolled Hexagon Nuts, reamed and chamfered for Bolts from 1¼ to 1¾ in. diameter, at a very low price.

JOHN McANERNY & CO.,
Dealers in
Railway & Steamship Supplies,
63 BROADWAY, N. Y.

PUBLIC SALE

Of a Valuable Iron Property

In Augusta County, Virginia.

The undersigned Commissioners, in pursuance of a decree of the Circuit Court of Augusta county, Virginia, in three Chancery causes (brought on to be heard together), in which Denmead & Son, Raymond & Campbell, and Eyler, Cooper & Co., are respectively Plaintiffs, and the Buffalo Gap Iron and Steel Company and others, Defendants, will sell at public auction, on

Wednesday, the 3d day of March, 1875,

at BUFFALO GAP, in the aforsaid county, all the

REAL ESTATE

of above named company. Said Real Estate embraces a tract of

MINERAL LAND,

containing about **1450 acres,** with

TWO VALUABLE IRON FURNACES

thereon; and a FARM of about **600 acres.** These two parcels of Land will be sold separately.

The Mineral tract lies in and around a depression in the North Mountain range, through which the Chesapeake & Ohio Railroad passes, known as Buffalo Gap. The veins of ore on this land have been but partially developed, owing to the fact that the Furnace heretofore operated on it was plentifully supplied with good ore from the neighborhood, delivered at the furnace, at an average price of $2·50 per ton.

Competent mineralogists and miners, who have examined the openings made on the property, express the opinion that ore exists on it in very large quantities.

There are quarries of good limestone on the land; and much of it is well timbered.

THE FURNACES

are immediately on the Chesapeake & Ohio Railroad, in the great Iron Region of Virginia, and about 150 miles from the Coal Fields of West Virginia, which are traversed by said road. They are ten miles west of Staunton and 147 miles west of Richmond.

FURNACE No. 1 has been in blast for several years, and has operated well. No. 2 is entirely new, indeed not quite complete; but the materials for its completion are on hand and the work can be done in a few days.

Each of them has an Iron Jacket Stack, built on iron columns. No. 1 is 35 feet high and 9 feet across the bosh, to which is connected a Player Hot Oven. No. 2 is 40 feet high, 10 feet across the bosh, with a Raymond & Campbell Hot Oven.

There are three Cylinder Boilers, 40 feet long, three feet in diameter, and in excellent condition; a 60 horse power engine with two blowing cylinders, capable of making 7 lbs. of blast to the square inch, and in complete order; two water tanks with a capacity of 60,000 gallons, supplied from a never failing stream; a steam fire donkey engine, connected with several hundred feet of gum hose; an ample bridge or stock house, casting houses and two calcining kilns—in fine, the Furnaces are, in all respects, first-class.

Around them is a village of 25 or 30 houses, embracing a handsome and spacious manager's residence, offices, storehouses, shops, laborers' houses and a neat chapel.

THE FARM

hereinbefore mentioned adjoins the tract of Mineral land. It is well watered and timbered; and is very productive. Improvements consist of a large BRICK BUILDING, Grist Mill, Saw Mill, Tenants' Houses, a large Barn, and all the other out houses usually found on a good farm in the Valley of Virginia.

Parties proposing to buy are invited to examine the aforesaid property before the day of sale. Mr. John Tierney, who is in charge of the furnaces at Buffalo Gap, will take pleasure in showing the property; and the undersigned Commissioners, who may be addressed at Staunton, Va., will take pleasure in answering inquiries concerning the same.

At the same time and place will be sold whatever PERSONAL PROPERTY the Buffalo Gap Iron and Steel Company may have on their premises at Buffalo Gap.

Terms on which aforesaid property will be sold are as follows: Ten per cent of the purchase money will be required in cash, 15 per cent. in four months, and the balance in three equal annual installments from the day of sale, with interest from the last named day. For all deferred installments of purchase money, the purchaser will be required to give bonds with approved personal security, and the title will be withheld as ultimate security.

GEORGE M. COCHRAN, JR.,
THOS. C. ELDER,
Commissioners of Sale.

FOR SALE.

At Lowest Manufacturers' Rates,

GUNS & SHEET ZINC,

Best German and Belgian Brands,

By *LOUIS WINDMULLER & ROELKER,*
20 Reade Street, N. Y.

For Sale, &c.

MACHINERY FOR SALE.

The following machinery, &c., being that recently owned by the

American Rolled Nut & Tube Co.,

at very low prices. Consisting of several sets of *ROLLS, HOUSINGS, BED PLATES, &c.,* for Rolling Nuts, including machines for finishing. 1 train of

8 in. Guide Rolls.

Large quantity of

Rolled Nuts for Bolts,

from 1¼ to 2 in diameter, reamed and burred ready for use. Lot of

STANDING PLATES.

These nuts have been extensively used, and are regarded as equal to any made, and will be sold much under the market value. Will also sell a

Fourth Interest in the Patent for making these Nuts.

It is confidently believed that nuts can be made on this plan cheaper and better than on any other yet adopted, and may be rolled of any length or size that may be required. All of the above machinery is nearly new and in complete order. For further information, apply in person or by mail to

N. C. NEWTON,
Metropolitan Iron Works, Richmond, Va.

For Sale!

Hardware Business

In a growing manufacturing town, one of the best locations in Vermont. Business well established and profitable. Stock about $10,000, in good order. This affords an excellent opportunity for a party with small capital to secure a paying business.

Address, **W. R. BIXBY & SON,**
Vergennes, Vt.

To Rent.

First and third floors—together or separate. Brick building 125x50, well lighted and the best business location in the city. Light power will be supplied if desired, or parties can furnish their own if preferred. Address, with particulars,

H. D. STANLEY, Secretary,
Bridgeport, Conn.

Hardware.

FOR SALE.—A thriving Hardware and Agricultural Business. One of the best locations in Western Massachusetts.

Ill health only cause for selling. Address
R. L.,
Office of *THE IRON AGE*, 10 Warren St., N. Y.

To Rent.

Desk room and part of second story, centrally located in Chambers Street. Office well lighted and pleasant. Surroundings agreeable. A desirable place for a hardware manufacturer wishing a sample room and storage for a small amount of stock.

Address *Chambers Street,* Box 4,
Office of *The Iron Age*, 10 Warren St., N. Y.

FOR SALE.

An ¾ inch mill train for making Merchant, Band and Hoop Iron. Will be sold cheap.

Apply to **W. W. JONES,**
Near the Lehigh Valley Railroad Depot,
Allentown, Pa.

For Sale or Rent.

Hibernia Iron Works.—This property is situated in Chester county, on the Wilmington and Reading Railroad, four miles north of Coatesville: It consists of a rolling mill for making flue or boiler plates; a forge with four fires and run-out fire; grist and saw mill; also farm of about 200 acres, with fine mansion house. Will be sold or rented, separate or together, on easy terms to a good tenant.

Apply to **James H. Bull,** West Chester, Pa.

For Sale or Rent on Easy Terms.

A four story brick factory 46x60 ft. with unfailing water power of about 25 horse-power, auxiliary steam engine of 20 horse-power. Adjoining are office, barn and other outbuildings. Situated near depots of three railways, and lines of boats to New York and Philadelphia. Every facility for manufacturing and getting goods to market at cheapest rates. Apply in person or by letter to either

JOSEPH W. ALSOP,
ROBERT N. JACKSON,
CHARLES E. JACKSON,
} Executors.
Middletown, Conn.

To Stove Manufacturers and Foundrymen.

The Carbon Stove Company,

Of Burlington, N. J.,

Will sell their Foundry, with all its appurtenances, business and good will, upon very liberal and accommodating terms, offering to any party wishing to engage in the Stove or general Foundry Business a rare opportunity.

The Foundry Buildings, which are of a capacity to employ forty or more molders, are very conveniently located upon navigable tide water on one side, and the Pennsylvania Railroad, with its freight station in front, being on the direct line between New York and Philadelphia.

The Buildings, Machinery and Appliances are all in prime order, and the assortment of Patterns, &c., for Stove, Range or Heater work, unsurpassed.

Address, for terms or other particulars,
CARBON STOVE CO., Burlington, N. J.

FOR SALE.—The Factory occupied by the undersigned as a saw manufactory. It consists of a **two story Brick Building,** 30 by 60 feet, brick boiler and engine room 16 by 30 feet, 15 horse engine and boiler, with every convenience and in excellent order, with a frontage of 90 feet on Broad St.; also, on same land, with a frontage of 120 feet on Canal St., one two story and basement frame Dwelling House, in good order. There is a very good supply of excellent water, and it is very conveniently situated, only five minutes walk from the ferry landing at Stapleton. The whole will be sold reasonably and on easy terms. Apply to or address,

J. & A. F. SIDDALL, Stapleton, Staten Island, N. Y.

FOR SALE,

£1. German consular instructions in English, published by subscriber.

Translator for MANUFACTURERS from and into the

English, German, French AND **Spanish.**

C. KIRCHHOFF
Metal Reporter of "The Iron Age,"
Box 2806, N. Y.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Feb. 17, 1875.

The past week has been dull and uneventful in Wall street. Money continues very abundant, with rates to borrowers on call ranging 2@3 per cent., and to borrowers, on prime commercial paper, 4@6 per cent. The extreme cold of the past few days exerts a depressing influence upon the financial, as upon other markets. The bank changes are comparatively unimportant. The following is a comparison of the averages of the past two weeks:

	Feb 6.	Feb. 13.	Differences.
Loans	$291,197,700	$293,111,200	Inc. $1,913,500
Specie	15,162,400	15,894,300	Inc. 731,900
Leg. Ten.	57,275,400	56,647,4 0	Dec. 628,000
Deposits	238,123,200	238,832,300	Inc. 707,100
Circ'lation.	23,642,200	23,512,900	Dec. 129,500

During the week the gold premium has ranged between 114⅝ and 115⅛. Owing to a general fear of an attempt to corner cash gold, foreign exchange became feverish and irregular. The following table shows the daily range of the premium:

	Highest.	Lowest.
Thursday	114⅝	114⅜
Friday	114⅝	114⅜
Saturday	114⅝	114½
Monday	114⅝	114½
Tuesday	115⅛	114½
Wednesday	115⅛	114⅝

Government bonds have been irregular, but have averaged higher than last week. Railroad bonds were strong, especially Union Pacific, which advanced on the strength of a proposition from the company to settle its obligations to the government, as follows: The Company proposes to pay into the Treasury of the United States $500,000 per annum on each first day of July, beginning with 1875, and to continue this payment for twenty years, and thereafter on each 1st day of July the payment shall be $750,000. And the money so paid in shall be held by the Secretary of the Treasury as a sinking fund to the credit of the Union Pacific Railroad Company, specially devoted to the extinction of the government mortgage, with interest reckoned at six per cent. per annum, payable semi-annually, and the accruing interest each half year to be carried to the account of the sinking fund to the credit of the Union Pacific Railroad Company. This annual payment shall be continued without delay or default until the amount to the credit of the company in the hands of the Secretary of the Treasury shall be equal to the full amount of the government mortgage reckoned at simple interest to same date. The government lien now existing is to remain as security for the discharge of this obligation, and to be cancelled when the sinking fund thus created shall equal the mortgage of the government reckoned at simple interest; at which time the sinking fund shall be transferred to and shall vest in the United States. This payment shall be in full discharge of all obligations due from the company to the government.

We give below the quotations of governments at the close of business to-day.

The stock market has been dull and irregular, with principal dealings in Western Union, Union Pacific, Northwestern, Lake Shore and Wabash. The highest and lowest of to-day's quotations of active shares are given below.

The foreign trade movements for the week are as follows:

IMPORTS.

	1873.	1874.	1875.
Total for week	$11,364,368	$8,871,703	$6,601,928
Prev. reported	42,328,109	33,575,239	31,764,632
Since Jan. 1	$53,692,477	$42,446,943	$38,376,560

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Ashes	176	$1,795
Brass goods	17	2,301
Bronzes	4	399
Chains and anchors	285	10,366
Copper		931
Cutlery	86	35,210
Guns	88	6,861
Hardware	140	12,672
Iron, pig, tons	700	18,774
Iron cotton ties	360	1,115
Iron, other, tons	433	26,093
Lead, pigs	2,717	15,596
Metal goods	192	14,076
Needles	16	7,336
Old metal		9,045
Platina	1	2,780
Per. caps	13	2,712
Saddlery	3	384
Steel	1,651	14,173
Tin, boxes	7,000	57,409
Wire	18	2,480
Zinc	33,346	2,194

EXPORTS OF SPECIE.

Total for the week	$581,015
Previously reported	11,072,317
Total since January 1, 1875	$11,653,332
Same time in 1874	4,314,957
Same time in 1873	8,972,984

Government bonds closed as follows:

	Bid.	Asked.
U. S. Currency 6's	119½	119½
U. S. 6s 1881, reg	118½	119
U. S. 6s. 1881, cou	119½	120⅛
U. S. 1862, 5-20 reg	116⅛	116¾
U. S. 5-20 1862, cou	116⅛	116¾
U. S. 5-20 1864, reg	117⅛	117⅝
U. S. 5-20 1864, cou	117⅛	117⅝
U. S. 5-20 1865, reg	116⅛	116⅞
U. S. 5-20 1865, cou	119⅛	119¾
U. S. 5-20 1865, reg. new	118⅛	118⅝
U. S. 5-20 1865, cou	118⅛	118⅝
U. S. 5-20 1867, reg	119	119¼
U. S. 5-20 1867, cou	119¼	119⅜
U. S. 5-20 1868, reg	119	119⅜
U. S. 5-20 1868, cou	119¼	119¾
U. S. 10-40 reg	114⅛	114¾
U. S. 10-40 cou	116⅛	117⅛
U. S. 5s. 1881, reg	114⅛	115
U. S. 5s, 1881, cou	114⅛	115⅛

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	101⅛	101
Lake Shore	73⅛	72⅞
Rock Island	103⅝	103⅛
New Jersey Central	108¾	108¼
Del., Lack. and Western	109⅝	109⅛
Michigan Central	75	75
Wabash	10⅛	10
Western Union Telegraph	71¾	70⅝
Atlantic and Pacific Telegraph	22⅜	22⅛
Northwestern	42⅛	42
" Pref	56½	54¾
Milwaukee & St. Paul	54½	54
" Pref	55	54¼
Panama	111¾	111¼
Pacific Mail	33⅜	31
Erie	28	27½
Ohio & Mississippi	26½	25
Union Pacific	40¾	39⅜
C., C. & Ind. Central	5⅝	5½
Atlantic and Pacific Preferred	13	12⅞
Missouri Pacific	45	45
Hannibal & St. Joseph	20	19¾
Quicksilver	33½	33⅛
Quicksilver Preferred	38	38
Maryland	18⅜	18⅛
Wells, Fargo & Co. Express	87	87
United States Express	60	60

GENERAL HARDWARE.

Trade is somewhat improved, but is not as lively as was anticipated. The extreme cold has kept merchants from buying stock, and hindered the ordinary preparations usually made at this time of the year for the spring trade. The ice blockade has delayed the shipment of goods from the Eastern manufacturers, and from some points no boats have reached New York for several days. This state of affairs causes a great deal of inconvenience and considerable expense, and in consequence the railroads have been overburdened with freight that could not be held back until the ice breaks up sufficiently to allow the boats to come through.

The Stanley Rule and Level Co. have just issued the following new discount sheet, under date of the 1st instant:

Anger Handles	dis. 10 %
Awl Hafts, with Screw, Nut and Wrench	25 %
" Common	30 %
Awls, Patent Pegging	20 %
Brad Awl Handles	20 %
Brad Awls, Handled	20 %
Bevels, Sliding T	45 %
" Patent Finish, Bailey's	20 %
" " Eureka	30 %
Cabinet Makers' Clamps	20 %
Chalk-line Reels and Awls	20 %
Carpenters' Tool Handles	20 %
Cattle Ties	20 %
Chisel Handles	15 %
Cross Cut Saw Handles	10 %
Countersinks Wheeler's Patent	25 %
Dado, Filletster, Plow, etc., Combined	20 %
Door Stops, No. 6	30 %
" No. 8	45 %
Door Fenders, Floor	40 %
File Handles	15 %
Gauges	45 %
Hand Screws	25 %
Level Glasses	65 %
Mallets, Hickory and Lignumvitæ	10 %
Mitre Squares, Improved	20 %
Mitre Try Squares, Improved	30 %
Planes, Bailey's Patent	20 %
Plane Irons, "	20 %
Plane Handles	20 %
Pinking Irons	60 %
Plumbs and Levels, Non-Adjustable	65 %
" Patent Adjustable	65 %
" Nicholson's Patent	20 %
" Iron Frame	20 %
Pocket Levels	50 %
Plow, Filletster, etc., Combined	20 %
" and Matching Plane, Combined	20 %
Plumb Bobs, Adjustable	20 %
Rules, Boxwood, Stanley's	net 70 %
" Ivory, "	" 55 %
Miscellaneous Articles "	" 55 %
Rules, Boxwood, Stearns'	" 60 %
" Ivory, "	" 45 %
Miscellaneous Articles "	" 45 %
Sash Frame Pulleys	20 %
Sash Cord Irons	10 %
Scratch Awls, Handled	20 %
Saw Handles	30 %
Screw Drivers, No. 1	30 %
" No. 2 (same list)	40 %
Steak Hammers	25 %
Spoke Shaves, Bailey's Patent	20 %
Spoke Shave Cutters "	20 %
Tackle Blocks, Rope & Iron Strap'd	25 %
" Awning	35 %
Tack Hammers, Improved, No. 4	20 %
" Magnetic	25 %
Trammel Points	25 %
Tool Handles and Tools, Excelsior	25 %
Try Squares, No. 2	15 %
Try Squares, Improved, No. 1	20 %
Try Squares, Improved, No. 2	30 %
Try Squares, Plumb and Level	30 %
Try Square and Bevel, Combination	20 %
Try and Mitre Square, Winterbottom's Patent	20 %
Upholsterers' Hammers	20 %
Veneer Scrapers, Bailey's Patent	30 %

The above is subject to a cash discount of 10 per cent., except goods marked net, if paid within 30 days. The most noticeable change is in Boxwood Rules, which are now quoted discount 70 per cent., instead of 60, 10&10, net cash. They also issue the following page of prices on new goods:

Winterbottom's Patent Combined Try and Mitre Square.

This Tool can be used with equal convenience and accuracy, as a Try Square or a Mitre Square. By simply changing the position of the handle, and bringing the mitred face at the top of the handle against one edge of the work in hand, a perfect mitre, or angle of 45°, can be struck from either edge of the blade.

No. 1. Iron Frame Handle, with Black Walnut (Inlaid) Sides, Graduated Steel Blades.

Inches	4	6	8
Per dozen	$6·00	7·50	9·00

No. 2. Rosewood Handle, with Steel Blades.

Inches	4½	6	7½
Per dozen	$4·00	5·00	6·00

½ dozen in a box.

Bailey's Patent Adjustable Planes.

Two additional Block Planes may now be included in the list contained on page 39 of our Catalogue. They are adjusted by a Screw and Lever movement, as shown in the engraving. The handle to No. 15½ is secured by the use of a Thumb-Nut; and it may be easily attached to, or liberated from the Plane, as the convenience of the workman may require.

(No. 15 is the same Plane, Without the Handle).

No.	Each.
15, Block Plane, 7 inches in Length, 1¾ inch Cutter	$2·50
15½, Block Plane, 7 inches in Length, 1¾ inch Cutter, Rosewood Handle	3·00

They also issue the following circular:

NEW BRITAIN, February 1, 1875.

GENTLEMEN:—Your attention is invited to the enclosed Discount Sheet, just issued, which please attach to our illustrated Catalogue for 1874. Also please insert the accompanying circular, as page 30½ in the Catalogue.

With our manufacturing facilities considerably enlarged, our efforts will still be directed to the production of superior tools, in the full line which we undertake to furnish.

Our claims for superiority in the essential qualities of our tools are based on the preference accorded to them by the consumer. The favorable verdict of the last man—the one who uses the tools—is that which establishes a permanent reputation for excellence; and this we have successfully labored for, as we have abundant testimony.

We have lately added to our line several new tools, and have in process of development others, which will be announced as they are perfected and ready for sale.

Our attention has been called to attempts being made to appropriate the name, and, if possible, the reputation of those celebrated tools, "Bailey's Patent Adjustable Planes," manufactured by us now, as heretofore, under the personal supervision of Mr. Leonard Bailey, the originiinal inventor and patentee. Dealers are invited to exercise care in selecting the genuine tools, manufactured exclusively by this company, and now so extensively and favorably known by all mechanics. Manufacturers infringing our rights under the original Bailey Patents will be rigidly dealt with.

A little care can be profitably exercised, too, by dealers, in the purchase of Adjustable Levels. After a level is called "adjustable," the question as to the method by which it is adjusted, still enters in to determine its value to mechanics. The simplicity and perfect accuracy of the method employed by us in our "Patent Adjustable Levels" will be recognized at a glance, and we invite comparison of this tool with all other so-called Adjustable Levels. The aggregate sales of our levels in 1874—adjustable and non-adjustable—largely exceeded the greatest number ever sold by us in any previous year.

The advanced price on Knox Fluting Machines, made by the manufacturers a short time since, cannot be maintained, and we change our quotations by reducing them 10 per cent., but leaving them higher than before the advance. There appears to be large stocks in the hands of dealers, bought, probably, at old rates, and until these stocks are reduced the new prices are only nominal, and our quotations are about the market rate. The decision in regard to the Cabbel patents, under which the Knox machines have been made, has not as yet affected the price of others.

In our last we spoke of the prices of Strap and T Hinges and Wrought Butts as being demoralized. It was a slip of the pen to write thus of Wrought Butts. We intended to confine our statement to Strap and T Hinges, but Wrought Butts are so usually coupled with them that the mistake was natural.

George B. Walbridge & Co. have taken the agency of the Porter Saw Co., manufacturers of Circular, Mill, Cross-Cut and other Saws, of which they will carry a stock. They are now also agents for Phillips' Angular Boring Machine, which withdraws the Auger without stop or change of motion.

The manufacturers of Stocks and Dies have issued the following circular:

WATERFORD, N. Y., Feb. 12, 1875.

We, the undersigned manufacturers of Stocks and Dies, agree to sell our goods at 5 and 10 off cash from list, until further notice.

J. M. KING & Co.
HOLROYD & Co.

We pay no freight.

The above goods have for a long time afforded no profit to the trade handling them, and it is hoped that this new price, which we believe was made by the solicitation of the Western jobbers, will correct the demoralization that has existed in Stocks and Dies. There are but two manufacturers, and it is expected that the goods will be held firmly at the new price.

Balances are now quoted discount 40 per cent. from the old list, being an advance on previous prices. One of the manufacturers has for some time been using a list from 50 to 75 per cent. higher than that in general use, from which, of course, a larger discount must be taken.

Trade in English goods goes on without change. A cable dispatch has been received to the effect that the strike of Scissors' grinders in Solingen came to an end on Monday by the submission of the men. The prices of these goods will, therefore, remain as before.

Business in Nails is at present dull. All the agencies of Eastern mills are short of Nails on account of the ice, which prevents receipts. For small lots, $3·40 is the price, but lots of 200 kegs or over could be bought at $3·35. We hear of outside lots offering at less, but standard brands are firm at the prices given above.

Among the removals to take place this spring we notice the following: Sargent & Co. will occupy the building No. 37 Chambers street, running through to Reade street; William A. Dodge goes to No. 96 Chambers street; Charles Parker to 97 Chambers street, and M. Gould's Sons to 83 Duane street.

The market for Glass has been dull for some time, but prices are stiffer on account of the expected advance in the duty. The discount is 60 and 10 per cent.

Semple, Birge & Co., St. Louis, Mo., have just brought into market a new patent Corrugated Strap for Scoops, Shovels and Spades (Morehouse & Well's Patent), which promises to work a revolution in those tools as decisive as has already been done by a similar patent in Spoons and Forks. Great strength is given to what has heretofore been the breaking point of Shovels, without any increase of the size of the strap. They have arranged with the Ames, Rowlands, and Myers & Armour Works, and will furnish those brands of Scoops and Back Straps, making shipment direct from the factories. Their advertisement may be seen on our 24th page. The Livingston Horse Nail Company are the Eastern agents. Prices are one dollar a dozen net above the price of similar goods of ordinary patterns.

Russell & Erwin Mfg. Co. are issuing Vol. 3 of their Hardware price list as fast as they are received from the binder. This volume is uniform in size with Vol. 1, issued some time ago, and contains illustrations and price lists of a large assortment of Hardware goods sold by them. Vol. 2, now in press, will contain illustrations, description and prices of Real Compression Bronze, and other Hardware. The volume before us is introduced by the following:

NOTE.—Annexed is a reprint of our circular issued to the Hardware trade in our catalogue of 1863, to which we beg to call your special attention, from the fact that it is applicable to-day as well as for the 22 years last past.

CIRCULAR.

Your attention is respectfully invited to the accompanying catalogue of Hardware, which will be found to embrace an increased variety of very desirable kinds, comprising a larger assortment than can be found at any other manufacturing establishment in America.

To the quality of our goods we ask special attention, and invite a careful comparison with any other maker's goods of corresponding kinds.

We are prepared to make any desirable style or kind of goods that may be demanded in our branch of business.

Our facilities and experience enable us, and we are determined to furnish goods on the most favorable terms, and we invite the trade to examine our goods and prices, which can be done at either of our warehouses, or at our factories.

In addition to goods of our own manufacture, we have such arrangements with other manufacturers as to enable us to supply a large variety of Hardware, suited to every branch of the trade, upon the same terms which the manufacturers sell the same.

One of the best things we have ever seen is the Automatic Dog Muzzle, made by W. T. & J. Mersereau. This allows the dog to open his mouth freely, and thus drink and breathe naturally, which are essential to his comfort and health, especially in hot weather. So great is this necessity that many eminent authorities say that the ordinary Muzzle causes more mischief, by making dogs rabid, than it prevents. This improved Muzzle has received the approval of Mr. Bergh, and has been largely sold. Its price is $6 per dozen.

Maltby, Curtis & Co. are introducing a smaller size of Nail Puller for opening small boxes, which is made of the same pattern as the "Giant," and about half the size, and listing $22 per dozen.

The entertainment to the Hardware Trade given by Henry Disston last Wednesday evening, was probably the most influential gathering of the trade that has ever taken place. The guests from New York, including a number of Western men, were met at the depot of the Pennsylvania Railroad by Samuel Disston, under whose care the party were entertained in a special car until their arrival at the Germantown depot, where they were met by carriages and taken to Mr. Disston's residence. This mansion, which is one of the very finest in the United States, called out the most unbounded expressions of admiration from all the guests. In either richness or taste of ornamentation it would be difficult to suggest how it could be improved. Indeed, this house is recognized as one of the sights of Philadelphia, and a considerable time was very pleasantly passed in looking through it. Card tables were provided for such of the company as fancied that amusement, and the evening passed pleasantly until supper was announced. The caterer, George W. Glenn, had provided one of those elegant tables which appeal to the two senses of sight and taste as nothing else can, and the company proceeded to do ample justice to the good things set before them. Mr. Disston made a short speech of welcome to his guests, and introduced his son Hamilton, who sang a song entitled "Stand by Your Friends," which Mr. Disston stated was the motto of their house. Letters of regret were read from persons who were unable to be present, and a great many things were done and said which it would not be easy to report. After supper there was music and conversation till the party gradually broke up. Among the guests present we note the following:

John Cantwell, St. Louis, Mo.
M. C. Hawley, San Francisco, Cal.
J. Fleischman, San Francisco, Cal.
James T. Anderson, Indianapolis, Ind.
John K. Parks, Taunton, Mass.
E. R McDonald, St. Joseph, Mo.
Geo. Henry Sargeant, New York.
E. G. De Hart, San Francisco, Cal.
R. G. Chandler, Cold Water, Mich.
O. A. Bostwick, Toledo, Ohio.
C. A. Hotchkiss, Bridgeport, Conn.
Samuel Baldwin, Bridgeport, Conn.
Thos. Chalmers, Jr., New York.
N. W. Belcher, Providence, R. I.
Jno. H. Graham, New York.
Sam. A. Haines, New York.
Thos. Hamilton, Toledo, Ohio.
Charles Bliven, New York.
Charles J. Bliven, New York.
C. T. Adams, Cincinnati, Ohio.
Irving Neale, New York.
George Murray, New York.
J. L. Hibbs, Portsmouth, Ohio.
O. L. Jones, Columbus, Ohio.
J. E. Terry, Philadelphia.
John Alling, Chicago, Ill.
Chas. M. Biddle, Philadelphia.
E. C. Simmons, St. Louis, Mo.
J. P. Carter, Philadelphia.
Jno. C. Brenner, Philadelphia.
C. S. Landers, New Britain, Conn.
George M. Franklin, Lancaster, Pa.
George Steinman, Lancaster, Pa.
James M. Vance, Philadelphia.
James Weir, Philadelphia.
James A. Weir, Philadelphia.
Aaron Samson, Philadelphia.
Frank Bradenbaugh, Baltimore, Md.
W. Herron, Dayton, Ohio.
Paul Denckla, Philadelphia.
Reuben Denckla, Philadelphia.
Augustus Heaton, Philadelphia.
George Bonbright, Philadelphia.
John Fernley, Philadelphia.
Benj. F. Libby, New York.
Chas. Killer, Philadelphia.
W. H. Allen, Philadelphia.
Martin Buehler, Philadelphia.
A. W. Walters, Philadelphia.
James Kilbourn, Columbus, Ohio.
J. L. Hibbs, Portsmouth, Ohio.
Jos. D. C. Pounall, Christiana, Pa.
J. Emery, Portland, Me.
Jno. Burr, Philadelphia.
J. K. Smith, Jr., Philadelphia.
Jno. A. White, Philadelphia.
Paul J. Field, Philadelphia.
I. B. Baxter, Jr., Philadelphia.
Edward Hand, Philadelphia.
Coates Walton, Philadelphia.
Harry W. Hewes, Philadelphia.
V. P. Humason, New York.
W. J. Lloyd, Philadelphia.
W. W. Supplee, Philadelphia.
G. W. Allen, Philadelphia.
N. C. Donaldson, Philadelphia.
Arthur Emery, Baltimore.
E. C. Carlin, Alexandria, Va.
Wm. S. Louderback, New York.
Thos. Moore, Chester, Pa.
Chas. W. Ghriskey.
C. W. Van Doorn, Cleveland.
David Williams, New York.

Altogether the entertainment was a great success. Every one present met people whom he had heard of but had never seen, and it cannot but be productive of good that so many persons who are every day in active competition with each other should have passed at least one evening in pleasant, social intercourse.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, Feb. 17, 1875.

Scotch Pig.—The market improved a little after the last report was cabled, but has since fallen off, and prices are barely steady at the decline. The following are makers' quotations:

Gartsherrie, No. 1	88/
Coltness, No. 1	90/
Glengarnock, No. 1	85/6
Eglinton, No. 1	75/

Manufactured Iron.—The market rules dull, and quotations are nominally £9. 10/@ £10. 5/ for Best Staffordshire Bars.

Rails.—The market is dull, and Welsh are quoted at £6. 10/@ £7. 5/.

IRON.

American Pig.—During the past week every department of the Iron trade in this city has been almost completely stagnant, on account, we suppose, of the impossibility of making deliveries, because of the freezing of the rivers. In Pig Iron we hear of no important transactions, and therefore repeat our quotations without change, although there are well-informed persons who think the tone of the market is slightly weaker. We quote No. 1 Foundry, $27@$28; No. 2 Foundry, $25@$26; Gray Forge, $23@$27.

Scotch Pig.—Only the smallest retail business has been done. We quote: Coltness, $37@$38; Glengarnock, $36@$37; Eglinton, $33·50@$34.

Bar.—The tone of the market is firm at 2·7c.@2·8c., with very little doing.

Rails.—We hear of no transactions, and quote American at works, $48@$53, currency.

Old Rails.—There are not many Rails actually here, and the ice and snow make transportation difficult. We quote $27@$28.

Scrap.—The market continues as before reported, and we quote $34@$35.

METALS.

Copper.—The market is devoid of life, sales having been restricted to 200,000 pounds Lake at 21¾c.@21⅞c., on the spot. On the one hand the railroads are overcrowded, and on the other Sound navigation is also closed. Baltimore Copper sells at 22c. in a small way. Lake Copper closes firm at 23c., below which figure none can be had. The severity of the winter will cause the opening of navigation on and about Lake Superior to be late this year, *i. e.*, not before June 1. The European accounts are slightly improved; thus the cable quotation from London, dated Saturday last, was for Chili Bars £83. 10/@£84, the lowest previous figure having been £82, and Best Selected had from £89 risen to £90. 10/@£91. From what we have been able to ascertain, the available American supply between Lake Superior and the seaboard was as follows on the 1st instant: In first hands, 1,000,000 pounds; in the hands of speculators, 1,000,000; of dealers, 2,000,000; of manufacturers, 2,000,000; furthermore, in first hands, sold, but not delivered, 3,000,000 pounds, footing up 9,000,000, to which there will have to be added, in all likelihood, prior to June 1, the quantity that is yet to come overland from the Lakes in small lots, and of Baltimore and Tennessee Copper, to the amount of 2,000,000 pounds, making the probable aggregate supply from Feb. 1 to June 1, or, say, during four months, 11,000,000 pounds. Consumption, if the Brass business during the ensuing three months be as brisk as it was in September, October and November, 1874, would absorb sufficient to make the average between 2,500,000 and 3,000,000 pounds per month for the four months beginning with February 1. There is a reasonable hope that these expectations may be fulfilled, in which event we shall have no Copper to spare for export to Europe till we get the fresh supplies from Lake Superior in June next. This statement may serve to allay the apprehensions of some people on the other side, who erroneously look forward to large shipments from here any moment. Gold has, it is true, shown such an upward tendency that it may eventually favor exportation of Copper, but exchange has suffered an extraordinary tumble this week, there is consequently a sufficient offset against a rising premium for the present. The manufactures of Copper have been quiet as follows: New Sheathing, 28c.; Bolts and Braziers, 30c.; Bronze and Yellow Metal Sheathing, 21c.; and Yellow Metal Bolts, 28c., net cash.

Tin.—As the demoralized state of the European and East India markets continues, the position of the metal here is weakened thereby still more than has lately been the case, and in the absence of any transactions from first hands, be it on the spot or to arrive, we have to reduce quotations to nominally the following, in gold: Straits, 21½c.; L. and F., 21c.; English Refined, 21¼c.; and Banca, 25c. The following are the cable quotations: "PENANG, Feb. 16.—$23·50 per picul." "SINGAPORE, Feb. 17.—$24·50 per picul." "LONDON.—L. and F., £95; English Refined, £97." Another private telegram reports Straits at London £90, which would be a £2 decline for the week, while L. and F. fell but £1, and English Refined remained steady. Another telegram reports the "Olive," for Boston, with about 4500 Slabs Straits Tin on board, to have been left in a sinking condition at sea. This vessel left Singapore some time in January, we presume, as she was loading there Jan. 1st. If the quantity thus reported lost has not been magnified, it makes a material difference in the visible supply. Stocks on this coast are but moderate, and the amount known to be on the way does not exceed the usual quantity; while, therefore, prices are declining to a low level, consumers, with the opening of the spring trade, will, we trust, be in a good position and quite ready to avail of the moderate ruling, the more so as in Europe the metal may then also have touched bottom. The business in *Tin Plates* has been confined to a mere jobbing trade, but rates are

nevertheless well sustained at or about our last figures. We quote: I. C. Charcoal, $9·75 @ $10, gold; Charcoal Terne, $8·62½ @ $9; I. C. Coke, $8; and Coke Terne, $7·12½ @ 7·50, all gold.

Lead.—There is an uncomfortable feeling noticeable about this metal, both in Europe and here, from a sort of instinctive conviction that a further decline is inevitable, should Spain recover its full productive capacity, so far as Europe is concerned, and we on our part go on increasing our own production from native ores as we did last year in such a surprising manner. Our turning out 46,500 tons in 1874, against 29,000 in 1873, despite the many obstacles we encountered, calls for reflection on this subject. As it is, we are proceeding slowly in the way of sales, which have reached but 65 tons Domestic at 5·87c. to 5·95c., gold, in small 10 to 15 ton lots. Nothing has transpired in Foreign, which remains nominally 6¾ c. @ 6⅞c., gold. Manufactures move off slowly on the basis of 7¾c., net cash. Europe is weak.

Spelter and Zinc.—A slightly better impression appears to obtain with regard to Domestic Spelter, for it would seem that the financially most needy parties have sold out at the low figures lately current for common brands, and 6⅝c., currency, for ordinary to good ones, is now firmly insisted upon, and would be all the easier obtainable, if business were not as stagnant as it is in the metal line just at present, while the difficulties of transportation last. Foreign Spelter, though also inactive, remains steady at lately established limits of 7⅛c. @ 7⅜c., gold, for ordinary to best Silesian brands. Breslau remains strong. Sheet Zinc quietly stays at 9¼c., gold, 9 by 36, while its dull season lasts.

Antimony.—Although London steadily keeps up its price of £54, it is difficult to establish a corresponding advance in our own midst, and we leave unaltered our quotations of 12½c. @ 12¾c., gold. No accumulation of stock to speak of is taking place here. With milder weather approaching, this metal may fulfill the good expectations entertained of it.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending February 16, 1875:

Hardware.

Anderson, Merchant & Co.
Files, cks., 9
Bawo & Dotter,
Cases, 1
Booth R. W. & Co.
Cases, 1
Casks, 3
Chains, cks., 38
Boker Bermann & Co.
Mdse. pkgs., 20
Casks, 45
Cutlery, cs., 4
Files, cks., 2
Clark & Co.
Cases, 1
Drexel, Morgan & Co.
Casks, 1
Day Thos.
Cases, 1
Casks, 7
Edwards Armory,
Rifles, cs., 11
Field A. & Co.
Cases, 76
Casks, 10
Anvils, 100
Chains, cks., 77
Fuller Bros.
Chains, cks., 4
Curry combs, cks., 1
Mdse. cks., 8
Hopkins E. J.
Packages, 4
King, Briggs & Co.
Cases, 1
Hoes, cks., 2
Chains, cks., 22
Lau & Garlichs,
Mdse. pkgs., 1
Laughland & Co.
Wire, pkgs., 2
Wire, bdls., 3
Merchants' Dispatch Co.
Chains, cks., 1
Cases, 1
Peters Bros.
Mdse. pkgs., 3
Russell & Erwin Mfg. Co.
Cutlery, cks., 1
Schoverling & Daly,
Casks, 2
Sawyer John,
Wire rope, coils, 6
Van Wart & McCoy,
Cases, 2
Chains, cks., 5
Hoes, cks., 6
Wiebusch & Hilger,
Mdse. pkgs., 45
Chains, 4
Chains, cks., 36
Spades, bdls., 30
Casks, 39
Cases, 8
Anvils, 180
Gun wads, cs., 5
Ward A.
Mdse. pkgs., 6
Wheeler E. S. & Co.
Cases, 1
Western Union Tel. Co.
Galv. wire, lots, 97
Zuricaldsy & Arguimbau
Nails, kegs, 30
Order.
Files, cks., 11
Casks, 2
Cases, 13
Packages, 11

Iron.

Cortis R. J.
Bars, 242
Champion & Gillett,
Sheets, 12
Ellis & Co.
Pig, tons, 100
Laughland & Co.
Hay bands, bdls., 450
Lang W. Bailey & Co.
Bars, 1525
Bundles, 470
Marvel W. D.
Ore, tons, 300
Phelps, Dodge & Co.
Sheet, bdls., 211
Order.
Pig tons, 400
Rods, bdls., 341
Cases, 39

Steel.

Brown Wm.
Bundles, 159
Cases, 36
Drexel, Morgan & Co.
Cases, 12
Naylor & Co.
Sheet, cs., 17
Tires, 4
Frog points, 10
Cases, 21
Pratt & Whitney,
Cases, 7
Order.
Bundles, 6880
Plates, 167
Bars, 17

Metals.

Arkell, Tafts & Co.
Tin ingots, cks., 65
Bruce & Cook,
Tin plates, bxs., 4120
Tin, ingots, 300
Byrne Joseph & Co.
Tin plates, bxs., 335
Canadian Bank of Commerce,
Tin plates, bxs., 3221
Haxtum B.
Lead, pigs, 4400
Hoadley & Co.
Scrap, bales, 8
Montell F. T.
Scrap, metal, bxs., 2
Loose, bbls., 18
Lead, pigs, 9
Scrap brass, cks., 4
Middleton & Co.
Scrap, pkgs., 8
Naylor & Co.
Tin plates, bxs., 650
Tin and terne plates, bxs., 981
Noel & Laurel,
Cases, tin, 2
Phelps, Dodge & Co.
Tin plates, bxs., 23,789
Tin, ingots, 1200
Wheeler E. S. & Co.
Tin plates, bxs., 1035
Order.
Tin and terne plates, bxs., 5265
Tinned sheets, cs., 13

COAL.

There continues to be the same active retail demand for Anthracite Coal that we have noted last week. Stove and Chestnut Coal are in good request, and, in consequence of the continuous demand for these sizes, are becoming scarce in the market. Of all the other sizes the market seems to be fully supplied. The production of coal in the collieries of the Anthracite Coal regions is still very limited. The rapid consumption of the stock of Coal on hand will no doubt probably soon lead to activity in the mining regions.

The Pottsville *Miner's Journal* says:—"The Associated Carrying Companies have had several meetings to arrange the programme for the present year. Last year the low rates at which freights ruled interfered with the contract system to a great extent, and other evils from the dullness of the trade grew up which they desire to remedy as far as they can in the arrangements for the present year's business. This, of course, takes some time to adjust, and beside they are in no hurry to fix matters in the present state of the trade, as no Coal except what is really needed for immediate use will go forward at the present prices. That association is as strong if not stronger than ever, because all parties know that the trade would be ruinous this year if from any cause they were to discontinue the association."

The quantity sent from the Schuylkill region for the last week was 4717 tons against 39,067 tons for the corresponding week last year.

The supply sent from all the regions for the last week was 122,371 tons Anthracite, and 38,011 tons Bituminous; for the week, 160,382 tons, against 223,567 tons for the corresponding week last year. Decrease, 63,185 tons.

The whole supply sent from all the regions so far this year is 1,484,846 tons, against 1,630,339 tons for the corresponding period last year; decrease 145,495 tons, of which 139,543 tons are Anthracite.

We quote as follows: Anthracite, $4·75 to $6·30; Cumberland, $6·50 to $7; West Virginia, $7·40; James River Steam, $6·25; James River Carbonite, 9; Kanawha House, $14·25; American Gas, $7 to $7·75; American Cannel, $12 to $14; Pennsylvania and Westmoreland, $7 65; Murphy Run, $7·40; Newburg Orrel, $7·50; Sterling Ohio, $12; Ince Hall, $17 to $18; Liverpool House Cannel, $18; Liverpool Gas, $11; Newcastle Gas, $8; Scotch, $9.

The Coal transported over the Cumberland Branch Railroad during the week ending Feb. 13, 1875, amounted to 1674 tons, as against 2232 tons shipped in the corresponding period of last year, showing a decrease of 558 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 13,818 tons, against 21,442 tons shipped in 1874, a decrease of 7624 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 112,655 tons.

OLD METALS, PAPER STOCK, &c.

Business in this market during the past week has been very dull. The cold weather and the low state of the water on the various streams, on which many of the largest mills are located, has caused a reduction in the running time, and a considerable falling off in the production. Old Metals remain unchanged, the call being light, and stocks are abundant. White Rags have advanced one-eighth of a cent a pound, and are moving freely. Other articles present no material change. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 4½c.; Zinc, 4¼c. @ 4½c.; Pewter, No, 1, 18c.; do., No. 2, 8c. @ 12c.: Spelter, 5c. @ 5½c., Wrought Iron, 1¾c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton. No 1, 6c. @ 6½c.; No. 2, 2½c.; White, No. 1, 6½c.; No. 2, 4½c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 4½c. @ 5c.; Gunny Bagging, 1c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¼c.; Grass Rope, 2½c. @ 2¾c.

PHILADELPHIA.

PHILADELPHIA, Feb. 16, 1875.

There is no material change in the Iron market to notice; prices are firmly maintained, and a disposition is reported on the part of some companies to advance Pig Metal $1 a ton, which meets with no response from consumers. Considering the season of the year, the difficulty of moving products, owing to the unusual weather, and the existing demand, Iron is now at about fair prices, until the opening of navigation. No prospect of any arrangement of the coal difficulties appears, and coal is growing scarce along the line of the Reading Road, so that shipments have been made from Port Richmond up the road. Quite a number of furnaces will be compelled to blow out on this ground unless production is resumed. The policy of the coal mining and carrying companies of the Anthracite region, in thus keeping up the price of coal, is simply developing Bituminous Coal and Coke Irons and regions at the expense of the furnaces, which are their heaviest customers, and a continuance of it will drive Iron making capital away from Anthracite fuel, with an irreparable loss to the coal interest. In Manufactured Irons, Bars are better, with 2·8c. firmly asked by city mills, and 2·7c. for Irons as far west as Harrisburg. There is also more inquiry for Rails, and a decided disposition to buy at present rates as cheap. Some considerable contracts are pending, and likely to be closed before your next issue. Old Rails and Scrap are firmer, as will be seen by quotations, and the market closes fairly active, with no prospect of any immediate change in prices. The following represent prices now ruling in this market, viz.:

PIG IRON—No. 1 Foundry, $28; No. 2, $26. Gray Forge, $25 to $26; White and Mottled, $20 to $22·50.

BARS—2·7c. to 2·8c. per lb.

RAILS—$50 to $53 at works.

OLD RAILS—$29·50 to $30.

SCRAP—$32 to $34, as to selections.

Among the sales we note: No. 1. Foundry, 4000 tons, at $28 here; No. 2, 400 tons, $26; 1000 tons, $26; 500 tons, $26; Gray Forge, 1000 tons, $23, at furnace; 3000 tons, private terms, at furnace. *Rails*—4000 to 5000 tons light sections for Eastern deliveries, private terms. *Old Rails*—2000 tons, $29·50. *Scrap*—500 tons No. 1 Wrought, $35, four months, flat. *Muck Bar*—300 tons Cold Short, private terms, said to be very low. Sales of 2000 to 3000 tons *Bars* at 2 65c. to 2·7c from country mills.

PITTSBURGH.

PITTSBURGH, Feb. 15, 1875.

PIG IRON.—There has been considerable activity in Forge Irons during the past week, the volume of business having been unusually large, and, what is still more important, at an advance of fully one dollar per ton as compared with last week. Sales of some five thousand tons were reported at $22, 4 mos., at furnace, and $24, 4 mos., here—the former, taking the cost of transportation into consideration, being equal to the latter. It is but proper to state that some of this iron was sold to go to Wheeling and other points where there is no strike, and will come back here in the shape of Muck Bar. However, the feeling is gaining strength that the lock-out will soon be a thing of the past, and the fact that several of the mills have started up their puddling furnaces at the reduction, strengthens this belief. Furthermore, there is not much doubt but what this feeling has had considerable to do with increased activity in Pig, as it is not likely that manufacturers would be buying, especially at the advance, if they did not expect to start up soon; and there is reason to believe that many of the puddlers are just as anxious to resume work at the reduction as the mills are to start up. As compared with December last, when there were some sales at very low figures, prices have advanced $3 to $4 per ton. As might be expected, producers feel considerably elated over the course of the market during the time in question, and some of them expect prices to go still higher, although there is nothing in the present position of the market for the product to justify even the advance of the past week, as the raw article is higher now relatively than the product.

QUOTATIONS.

No. 1 Foundry	$26·00 @ 27·00—4 mos.
No. 2 Foundry	24·00 @ 25·00—4 mos.
Gray Forge	23·00 @ 24·00—4 mos.
White and Mottled	21·00 @ 22·00—4 mos.
Hot Blast Charcoal	30·00 @ 33·00—4 mos.
Cold Blast Charcoal	40·00 @ 50·00—4 mos.

MUCK BAR.—The market has been rather quiet during the past couple of weeks; at least there have been but very few sales reported. Prices, however, notwithstanding the advance in Pig Iron, are without quotable change, which indicates that there is not much inquiry, and this also leads to the belief that the mills expect to be making their own Muck Bar before long. We continue to quote at $42 to $44,4 mos. The receipts continue to keep up pretty well, but nearly all of that coming forward was sold or contracted for some time ago.

MANUFACTURED IRON.—Trade in all kinds of finished irons continues dull, which is not strange in view of the lock-out, as makers have not been soliciting business, many of them being unwilling to go beyond supplying immediate wants of regular customers; and with a very light production and diminished stocks, together with the enhanced cost of the raw article, the general tone of the market is firmer, although, as compared with last week, prices remain unchanged. We continue to quote on a basis of $2·35 to $2·40 for Merchant Bars; the card is 2½c., usual time.

NAILS.—The Nail trade, while it is a little better than it was about the first of the year, is not what it should be, or usually is, at this particular time, and while hopes are entertained of at least an average spring trade, the indications at this writing are not very encouraging. However, manufacturers here are not very anxious for orders at current rates, which, it is claimed, afford little or no margin for profit. While $3·15, usual time, is generally regarded as the ruling rate, sales are reported as having been made at equal to $3·05 to $3·10, or $3, cash. Horse Shoes reported steady at $5·25 for 100 keg lots, and Mule Shoes at $6·75, cash.

STEEL.—There is a very fair trade for Steel. The demand is increasing. Some of the mills report that they have about all they can do, and the outlook is regarded as being favorable for a good healthy spring trade. No change to note in prices, which are said to be lower than there is any necessity for.

SCRAP IRON.—The demand has fallen off somewhat within the past few weeks, which may be attributed to the belief that the lock-out will soon be at an end, and, furthermore, the inquiry, what there is, is mainly for small lots to meet immediate necessities. The supply, however, is small, and prices are still maintained. No. 1 Wrought, $31 to $32, delivered free at mills.

THE LOCK-OUT.—There is not much doubt but what the lock-out is drawing near to an end; several of the mills have started up some of their puddling furnaces at the reduction, $4·50 per ton, and others can do so whenever they are so disposed. The puddlers have discovered that it is useless to hold out any longer, and there is not much doubt but what many of them would have resumed work ere this if it had not been for their leaders. A city journal, which, ever since the strike was inaugurated, was disposed to favor the puddlers, concludes a long article on the subject as follows: "The puddlers have no longer any good reason for staying out. It is plainly their duty to go in at the best that can be had, and trust to a revival of business for better. We present this conclusion to them with not less candor and emphasis than we had occasion to use when defending them from harsh criticisms at the beginning of the trouble. The time has come for plain speaking and definite action. Lock-out or strike, or whatever it be called, it has served its purpose—the purpose of a test—there is no longer a solitary prop for it to rest upon, and the sooner ended the better for all concerned."

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of Feb. 12, report the Iron market as follows: There is little change in the market from our last report. Prices firm as quoted below. A disposition is manifested to lay in stocks at present prices. The local demand continues good.

Mo. Stone Coal, No. 1 F'dry	$32·00 @ 33·00—4 mos.
" " No. 2 F'dry	28·00 @ 30·00—4 mos.
" " Mill	27·00 @ 28·00—4 mos.
" Charcoal, No. 1 F'dry	31·00 @ 33·00—4 mos.
" " No. 2 F'dry	28·00 @ 30·00—4 mos.
" White and Mottled	30·00 @ 34·00—4 mos.
Tenn. Charcoal No. 1 F'dry	32·00 @ 34·00—4 mos.
American, Scotch, "Cherry Valley"	39·00 @ 43·00—4 mos.
Mo. Charcoal Blooms	75·00 @ 80·00—4 mos.

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Feb. 15, write us as follows: PIG IRON.—The market has been active and strong throughout the week, ending with a "stand-off" between buyers and sellers. The latter have advanced their views $1 on Foundry grades, but we do not hear of sales at this. Red Short Mill Irons continue in good demand and are scarce. Car Wheel Irons still neglected.

HOT BLAST CHARCOAL.

Hanging Rock No. 1	₱ ton. $28·00 @ —4 mos.
" " No. 2	27·00 @ —4 mos.
" " Forge	25·00 @ —4 mos.
Tennessee No. 1	26·00 @ 27·00—4 mos.
" Forge	25·00 @ —4 mos.
Alabama No. 1	26·00 @ 27·00—4 mos.
Missouri No. 1	27·00 @ 28·00—4 mos.
" No. 2	26·00 @ —4 mos.

HOT BLAST STONE COAL.

Missouri No. 1	₱ ton. $27·00 @ 28·00 —4 mos.
" Forge	25·00 @ —4 mos.
Ohio No. 1	26·00 @ —4 mos.
" Forge	24·00 @ 25·00—4 mos.
Scotch Pig, No. 1	26·00 @ 27·00—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel	₱ ton. $35·00 @ 50·00—4 mos.
Missouri " "	43·00 @ 45·00—4 mos.
Kentucky " "	40·00 @ 42·00—4 mos.
Tennessee " "	36·00 @ 42·00—4 mos.
Georgia " "	40·00 @ 42·00—4 mos.
Alabama " "	40·00 @ 42·00—4 mos.
Machinery and Forge	40·00 @ 42·00 —4 mos
Blooms	70·00 @ 90·00 —4 mos.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of Feb. 16: Trade continues ruling quiet and unsatisfactory for the season, and the existing ice blockade lends an additional cause to make it more so. We quote the market dull and depressed, with unchanged list.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ¾ to 1 thick	₱ lb. 2·6-10 to 2 7-10c. ₱ lb.
1 to 4½ wide by 1½ to 2 thick	
Round and square, ordinary sizes, from ¾ to 2 inclusive	3 6-10 to 2 7-10c. "
Hoop Iron, 1½ wide and upward	4½ to 4¾c. "
Band Iron, from 1¾ to 4 in. wide	3¾ to 3½c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	4 to 4¼c. "
Norway Nail Rods	6¾ to 7c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	15½ to 16c. "
Machinery Steel	11 to 11½c. "
Cast Spring Steel	10 to 10½c. "
Homogeneous Steel Plate	10½c. "
Perkins' Horse Shoes, per keg of 100 lbs	$5·87½
" Mule Shoes " "	6·87½

Common Horse Nails, from	14c.	16c. per pound.
	10 9 8 7 6	
Putnam Horse Nails	23 24 25 26 28c.	per ₱.
	10 9 8 7 6	
Globe Horse Nails	23 24 25 26 28c.	per ₱.
R. R. Spikes	5½ by 9-16 at 3c to 3¼c.	per lb.

Messrs. HOFFMAN, THOMPSON & Co., Iron commission merchants, 23 and 25 South Frederick street, under date of Feb. 16, report the Pig Iron market as follows: There appears to be rather more inquiry for Irons, but at low figures. Prices are rather stiffer, but with sales at about quotations. Market firm.

Baltimore Charcoal Pig Iron	$32·00 @ 35·00
Virginia " "	30·00 @ 33·00
Alabama " "	27·00 @ 28·00
Anthracite No. 1	27·00 @ 28·00
" No. 2	25·00 @ 26·00
" No. 3	23·00 @ 25·00
White and Mottled	20·00 @ 22·00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Jan. 31, 1875.—*Metals.*—The news of an impending lock-out on a vast scale in the Iron and Coal regions of our neighbors across the channel, which may, for an indefinite time, force 100,000 operatives into idleness, has overshadowed the English metal markets during the week under review, and by way of sympathy the Continental ones have grown duller likewise. The more immediate effect of gigantic strikes is always an inclination on the part of intending purchasers of metals to temporize, hence a curtailed demand for consumption, and as speculative holders cannot sustain prices a long time unless assisted by a steady demand from the trade, parties interested in producing a fall in values, immediately, and nearly always successfully avail themselves of the lull, and put out lower contracts for future delivery, the articles resorted to for the purpose being Chili Bars and Straits Tin. As these afloat sales heed the money market very little, the low discount of 3 per cent. does not deter these determined operators for a fall in the l.ast; the weak points in the statistical position of the two leading metals are paraded in their weekly market reviews, and these distributed broad cast. If, then, these arguments for a decline are, by chance, reprinted in the principal metal organs of London, the said operators are pretty sure that they have gained what they intended to bring about, as will have been observed early in November last year, when a raid was made on Copper, then rising a pound sterling per week, the London *Times* having been gained for the purpose. There is consequently no saying what may result in the way of a sudden decline in the two leading metals, should the least thing of a really unfavorable nature occur to back up these arguments for a lower ruling. Both Copper and Tin have, during the past year or two, become prominently speculative articles, the cables to Valparaiso and Singapore hightening the general interest taken in them by the capitalists and operators of Europe; we shall consequently have to be prepared for as wide fluctuations in 1875 as there have been during the preceding two years. *Copper.*—The foregoing and the absence of cable news from Valparaiso sufficiently explain the apathy observable in the English markets. Business here has been of a jobbing character merely, with a decline in Copper deliverable at Havre, which we quote as follows: Chili Bars, 216 francs; Ordinary ditto, 212; Ingots, 227·50; English Tough Cake, 227·50; and pure Corocoro Ore, 217·50. Lake Superior, at Havre, is quoted 245 to 250. The market there follows closely the quotations from London. Marseilles is quiet, there being but a moderate consumptive demand for the present, on the basis of 220 francs for Refined Ingots. *Tin.*—The Dutch sale of Banca on the 27th inst. produced the reduced average figure of a small fraction over 56 guilders. Previous to the auction the market had from 58¼ gradually given way to 57¾, and finally broke to 57½, thus preparing the metal trade for the poor upshot that was impending, in spite of the activity in Straits and Australian to arrive that had preceded the sale in the London market. Australian sells by sample, but is constantly improving in quality, and, as it is got up now-a-days in slabs of the same weight and appearance as its great competitor, Straits, the time seems to be near at hand when it will sell on cable advices of shipment, without samples, merely on the brand, as readily and as well as Straits, which will be a welcome arrangement to the great operators we have alluded to in our introductory remarks. Very little has transpired here. We have been on the downward track early in the week, but have since recovered, and quote Banca, deliverable here or at Havre, 272·50; Straits, 250; and English, deliverable at Havre or Rouen, 270. At Marseilles quite a drop has occurred since it became known that one steamer alone is expected in Europe from the Straits with 800 tons Tin on board. Both Straits and Billiton are quoted there 50 francs. The *Lead* situation has become uncomfortable, large arrivals from Spain continuing at Marseilles, where prices are down to 52½ to 53 francs. Nothing is going on there, and the market closes nominal. The same thing is the case here, where we nominally remain at 58¾ to 59. A fresh decline seems to be at hand at London, where good Soft English rules between £23 and £23. 5/, and Spanish, also Soft, £22. 5/ to £22. 10/. *Spelter* is dull in England and firm here. Silesian, deliverable at Havre, commands 63¼ francs; here, 64. There is no change at Marseilles. No prospect for a decline seems to be held out to the consumers of this metal, as long as England and France are going on at the same rate of extensive consumption we have been witnessing for some time past. *Iron.*—The French markets are in a poor plight. In the Champagne, Gray "Affinage" Pig has sold at 130 francs at the works, Coke Iron has been done at 220, and Sheet Iron is neglected. At the North several forges have lowered Merchant Iron to 200 to 210 francs, and thick Sheet Iron to 275. At St. Dizier the better kinds of Iron have been slightly looking up, while Scrap moves off with difficulty. No. 1 Iron is saleable at 125, and No. 3 at 110. The market is weak in the Muerthe and Moselle. White "Affinage" ranges between 77 and 80 francs. Our own market is quiet. *Coal.*—Iron industry being inanimate, and the sugar refineries having finished their work for the season, the sale of Coal is limited to the supplying of domestic wants, which are but moderate while the present spring-like weather lasts.

BELGIUM.

(Le Commerce.)

BRUSSELS, Jan. 31, 1875.—*Iron.*—Business in the Iron branch remains paralyzed, and a good many works will have to either curtail or altogether suspend operations, the province of Hainaut being even worse off than Liege. There is a rumor that even the Acoz forges have blown out their fires. *Coal.*—This lack of activity has a detrimental effect on the Coal trade, stocks of which begin to accumulate, the more so as the demand for household purposes is also a slack one. A good deal of activity is manifested regarding the future. Prices are nevertheless sustained, but the companies, foreseeing that a decline is inevitable, contemplate a reduction of wages, and after this shall have been accomplished, will be prepared to make concessions.

RUSSIA.

(Journal de St. Petersburg.)

ST. PETERSBURG, Jan. 28, 1875.—Our government has engaged the services of some Austrian engineers for the purpose of surveys preparatory to the building of railroads to the Persian frontier. The Russian system is now completed as far as Sarazin, on the Volga. Steamers are descending the latter into the Caspian sea, whence rail is to connect Russia with Teheran, the Persian capital. A line is being built to Astrakan, whence, through Bachou, it is to be carried to Enzeli, on the Caspian. De Lesseps' system is to continue this line eastward. A loan is also to be made for another line in a southerly direction to connect with the vast Coal regions of Russia. There are now twelve great railway lines in full operation, whose gross earnings in 1874 were something like 60,000,000 roubles.

GERMANY.

(Borsenhalle.)

HAMBURG, Jan. 30, 1875.—*Metals.—Copper.*—There is little to report about the German Copper markets, the dealings having been restricted to supplying the requirements of consumers at unaltered prices. *Tin.*—Absolutely nothing has transpired, and prices are nominal. *Lead.*—Our markets are decidedly weak; we quote German, here, 24 to 25·50 marks; English, 25·50 to 26, and Spanish, 25 to 25·50. *Spelter* is quiet, with nothing doing here for the want of stock. Spelter is wanted at Breslau at 28·75 marks.

HOLLAND.

(Evers & Co.)

ROTTERDAM, Jan. 30, 1875.—*Tin.*—Since the sale Banca has been done at 56¼ guilders, on the spot, and Billiton at 55; the latter April futures at 54½. Banca, January deliveries, 5756 slabs, against 6258 in 1874; stock on warrants to-day, 32,440, against 34,225; unsold stock, 103,880, against 105,548; afloat, 1100, against 5400; Billiton stock on warrants, 200, against 100; unsold stock, 2983, against 3067; stock in private hands, 28,260, against 24,053.

EAST INDIES.

(Sandilands, Buttery & Co.)

PENANG, Jan. 1, 1875.—*Tin.*—A large business has been done during the fortnight for Europe and the United States, at $24 to $24·40 per picul. Altogether about 8000 piculs have changed hands. Prices close very firm at $24·35, and there is very little available at present. Supplies still continue on but a moderate scale; but now, with the Chinese new year approaching, we shall have large arrivals during the next six weeks, as is usual at this season. Our exports to London last month were 415 tons by steamers, and 98 tons by sailing vessels; the total quantity exported to London during 1874 being 2425 tons, as against 2680 tons the previous year, showing a deficiency of 255 tons in 1874. We estimate the quantity awaiting shipment here for London at 250 to 300 tons. Exchange steady at 4/3½ to 4/3¾.

(Gilfillan, Wood & Co.)

SINGAPORE, Dec. 29, 1874.—*Tin*, after touching $24·75 per picul for Malacca, has again declined despite more encouraging accounts from Europe, and sales are reported at $24½ per picul. Exchange, 4/2¾ to 4/2⅞. *Shipping.*—For New York, the Marie is still loading; for Boston, the Olive.* The China for Boston took but 177 piculs; the Ringdove from Penang to New York took 1805. Tin movement from the Straits to the United States in 1874: Export, 45,747 piculs, against 39,429, 59,720, 46,793, 52,848, 34,698, and 29,710 in 1873 to 68.

(Clark, Spence & Co.)

POINT DE GALLE, Ceylon, Jan. 8, 1875.—*Plumbago.*—Fine qualities continue scarce and are in demand; inferior ones are neglected. We quote Lump, free on board, with freight and exchange at par, £16. 10/ to £17. 10/; Chips, £10 to £11, and Dust, £6 to £6. 10/, per ton. Exchange, 1/11 to 1/11 3-16.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Feb. 1, 1875.

GREAT LOCKOUT IN SOUTH WALES.

Masters and men have joined issue, at last, in the Welsh valleys, the result being that not less than 120,000 men are this morning thrown out of employment. The Masters' Association met at Cardiff on Thursday, and resolved, "in conformity with the 52d deed of the Association," to direct a general lockout on and after January 30th. It was also mentioned, but not made the subject of any formal resolution, that if the men made a general resistance, they should not be allowed to resume work except at a greater reduction than the 10 per cent. which is now the prime cause of dispute. I may say that the lockout closes 350 collieries in Glamorganshire and 80 in Monmouthshire, employing altogether 60,000 men. At the same time the interruption of fuel supply stops 20 large ironworks, employing an aggregate number of 40,000 men; iron-stone mines giving employment to 15,000 persons, beside sundry others who are engaged as top-men, loaders at the docks, and in other capacities. It will thus be palpable that the pecuniary loss to the country at large will be immense—fully £250,000 per week—should the dispute not be compromised, to say nothing of its indirect effects, such as the displacement of trading connections, the loss to ship owners, whose vessels

*LONDON, Feb. 16. By cable.—"The ship Olive, from Singapore for Boston, was abandoned at sea in a sinking condition."

are lying at anchor *minus* their usual cargoes, the deprivation of traffic from the railway and canal companies, with a host of the minor evils attendant upon an industrial dispute of this magnitude. Mr. Halliday is said to be unpopular among the men, it being alleged that he has unduly encouraged them to strike. The poor fellows are badly organized, have not fairly become aware of their own critical condition, are without leaders, have no reserve funds, few promises of pecuniary assistance, and very little encouragement or even advice from any single quarter or person.

THE SOUTH WALES COAL FIELD

is, it may be remarked, the largest in Great Britain, and the seams attain a greater thickness there than in any other coal district of the country. It occupies almost the whole of the county of Glamorganshire, its maximum breadth being 21 miles, with a length of 89 miles, extending through five of the counties of the little principality. The *Practical Magazine* remarks that the coal is remarkable for the great variation of quality, and the peculiar deposits require peculiar engineering skill for their development. The development of the coalfields dates from the time when coal superseded charcoal in iron smelting. It is appropriately called the South Wales basin, as the measures crop out on all sides. The coal-field over the extreme edges of this basin measures some 1200 square miles. Without discussing at full the distribution of coal, and the peculiarities of the strata, we shall give some notes, derived from a prolonged sojourning in Wales, of collieries and colliers, and making a selection from many names that might suggest themselves, we will say that Mr. David Davies, the now well-known member for Cardigan district, has been mainly instrumental in opening up the minerals of the Rhondda Valley. There is now a considerable literature belonging to the coal field, one of the latest and best publications being an important and voluminous paper, read by Mr. T. Forster Brown, at a recent meeting at Cardiff of the North of England Institute of Mining and Mechanical Engineers. Much still remains to be done for the full elucidation of the subject. It is said that "we know less, perhaps, of the succession of the coal strata than of any other in the United Kingdom, though they are the most important of all." Geological science halts in its nomenclature of the coal measures. There are a set of words used of the coal measures of South Wales, "rock cliff," "cliff quar," "pins," "undercliff," for which an entirely different terminology exists in the North. The subject of the development of the coal measures is beset with unsatisfied problems. For the classification the reader must be referred to publications that possess diagrams and plans of section. The coal field rests on millstone grit, which reposes on mountain limestone. Beneath the limestone is the old red sandstone, "the grandest exhibition in England and Wales," as Sir Roderick Murchison calls it, and below is the upper middle, or lower Silurian. Some of the strata are singularly contorted with faults. The quality of the coal varies exceedingly, from the pure anthracite, or stone coal of the Pembrokeshire district, to the highly bituminous coal of the Newport district. As a rule the change is gradual. The intermediate qualities are known as semi-bituminous, smokeless, bastard anthracite. In the Aberdare and Rhondda districts the seams are carbonaceous. The main development of the coal field is confined to Eastern Glamorganshire and Monmouthshire. The great bulk of the smokeless steam coal worked from the white ash series—the series which has really made Wales famous for coal and iron—is obtained from the Merthyr, Aberdare and Rhondda valleys. A question of very great importance is involved in the statistics of the wrought and estimated unwrought coal in the district. Mr. Forster Brown calculates that the present rate of fifteen million tons represents 1-2437th part of the workable coal. By many, however, this estimate will be considered as too sanguine. The estimate made by the colliery owners and engineers in South Wales, as evidenced also in Mr. Vivian's great speech, always leans to the favorable side. The total consumption of coal in the country, which can hardly be less than a hundred and twenty million tons a year, points to a date when our mines will approach the limits of a commercial possibility. The author of a very interesting little work, "Thirty Years in a Mining District," complains that the collieries in South Wales are being worked with very little consideration as to whether they will last one hundred or a thousand years, and that the owners, "in their anxiety to avail themselves of a large get of the best coal, at the lowest rate possible, other veins of coal, which at no very great length of time would be almost priceless, are being destroyed or cut off through mismanagement." The justice of this complaint is stoutly contested by the coal owners.

OTHER STRIKES AND DISPUTES.

Fifteen thousand ship building operatives on the Tyne came out on strike this morning against the employer's proposal to reduce wages 10 per cent. on day work and 15 per cent. on all piece work. It is not very clear how long the dispute will last. The Durham coal owners met on Friday and determined to reduce the wages of their miners to the extent of 20 per cent., the "drop" to take effect from the middle of March. This gives the men plenty of time to look round; indeed, it is questionable whether there is not time enough for them to save money in order to fight their employers. Many other strikes and wages' disputes exist throughout the kingdom, but I cannot enumerate them here for want of space.

ADDITIONAL WHITWORTH EXHIBITIONS,

for the encouragement of mechanical progress, are about to be formed by Sir Joseph Whitworth, whose previous scheme of scholarships has already done much toward the higher development of metallurgical and mechanical science. Sir Joseph proposes to found, in connection with Owen's College, Manchester, King's College, London, and University College, London, a certain number of exhibitions in order to fit those who win them to become better candidates for the Whitworth scholarships. He proposes that candidates shall be not less than 16 nor more than 18 years; that each shall produce satisfactory testimonials as to character, that they shall pass a preliminary examination on English subjects, the elements of mechanical drawing, and a practical examination in the use of tools, including, at least, two of the following handicrafts: filing and fitting, turning, smith's work, pattern making and molding. The successful competitors will be entitled to receive instructions for two years to fit them for the scholarship examinations, but at the end of the *first* year they must again pass the *college* examination or the cannot enjoy the second year's instructions. Sir Joseph will pay £100 yearly for four years to each of the colleges named, toward the academical expenses of the exhibitions. The first competition will probably take place in October next at Owen's College, Manchester.

SCOTCH PIG IRON MARKET.

The warrant market was flat during the greater part of last week, but there was a good amount of business done on one or two days in certain shipping brands. Special brands of maker's iron have not changed in price to any appreciable extent, but Coltness appears to have a harder tendency for No. 1 qualities. Connal's stores now contain 33,572 tons, as against a total of 41,930 tons last year at this date. There are 119 furnaces in blast, and 38 out. At the beginning of February, 1874, there were 123 furnaces in blast. Pig iron for ballast continues to be nominally quoted at 60/ per ton. Freights are mainly unaltered, Glasgow to New York being 5/ still. Writing on January 29th, Messrs. James Watson & Co. (Glasgow), report: "The iron market has been quiet during this week, the price fluctuating between 74/9 and 72/9, closing to-day nominally at 73/9. Shipments last week were 7934 tons, against 6532 tons in the corresponding week of 1874.

	No. 1.	No. 3.
G. M. B., at Glasgow	75/6	73/6
Gartsherrie, "	90/6	77/6
Coltness, "	91/6	77/6
Summerlee, "	90/6	77/6
Langloan, "	91/6	77/6
Carnbroe, "	85/6	76/6
Calder, at Port Dundas	90/	76/6
Glengarnock, at Ardrossan	88/	77/6
Eglinton, "	77/	75/6
Dalmellington, "	80/6	75/6
Shotts, at Leith	88/	78/
Kinneil, at Bo'ness	83/	74/3

Messrs. Wm. Colvin & Co. (Glasgow, 2d February), say: "The warrant market has been very steady during the past week, and business has been freely done betwixt 73/ and 74/. To-day the opening business was at 73/9, and the price receded to 73/3, but during the afternoon the market became firmer again, and closed with buyers at 73/9, and sellers 74/. There is little or no change to report in the value of the various brands of shipping iron, but the demand is fair, for the season, and the shipping returns are good.

	Delivverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	75/6 @ 76/6	73/ @ 75/
Gartsherrie "	90/	78/6
Coltness, "	91/6	77/6
Summerlee, "	90/	77/6
Carnbroe, "	85/	76/
Monkland "	76/	74/
Clyde "	76/6	74/6
Govan, at Broomielaw	76/	74/
Langloan, at Port Dundas	91/6	76/
Calder, "	90/	78/
Glengarnock, at Ardrossan	87/6	77/
Eglinton, "	77/	75/
Dalmellington, "	79/	75/
Carron, at Grangemouth, selected	87/6	—
Shotts, at Leith	90/	77/6
Kinneil, at Boness	82/6	74/
Bar Iron	£9. 10/	
Nail Rods	£9. 10/	

SHIPMENTS.

	Tons.
Week ending 30th January, 1875	10,988
" 31st January, 1874	5,635
Increase	5,353
Total increase for 1875	10,018

Messrs. John E. Swan & Bro.'s (Glasgow) prices current of the same date gives these figures and particulars:

Glasgow Brands.	Furnaces B'wing, 119	Furnaces Out 39.	Furnaces Built, 157.	Prices. No. 1.	No. 3.	No. 4
Gartsherrie	11	5	16	90/	77/	..
Coltness	12	0	12	92/6	77/	..
Summerlee	6	2	8	95/	77/	..
Langloan	7	1	8	92/6	76/	..
Govan	5	0	5	76/	74/	..
Calder	6	2	8	90/	76/	..
Shotts { Bess'mer	5	2	7	92/6	87/6	..
Shotts { Ordinary				87/6	79/6	..
Carnbroe	4	2	6	85/	76/	..
Wishaw	2	1	3	..	..	..
Monkland	6	3	9	76/	74/	..
Chapelhall				..	..	..
Clyde	6	0	6	76/	74/	..
Quarter-Clyde	4	1	5	75/	73/6	..

* f. o. b. Glasgow, 1/ per ton, extra.

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., 73/9.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock		7	2	9	87/6	77/ 80/
Ardeer		4	1	5		
Eglinton		6	2	8		
Lugar	Brand'd Eglin'n	4	0	4	76/	75/ 77/
Muirkirk		3	0	3		
Portland		3	3	6		
Dalmellington		6	2	8	79/	75/ 74/

EAST COAST BRANDS—*f. o. b. in the Forth.*

Kinneil		3	1	4	82/6	74/ 72/6
Almond		2	1	3	76/	75/ ..
Carron	Select'd	5	1	6	87/6	.. ..
Carron	Ordn'y				80/	75/ ..
Lochgelly		2	2	4	77/6	75/ ..
Camphinnans		0	2	2	..	75/ 70/
Bridgeness		0	2	2	..	.. ..

THE SHEFFIELD TRADES.

In some departments of business matters have a little brighter appearance than they have presented for some time past, but it cannot be said that there is as yet anything indicating a speedy return to activity in the staple industries of the town and district. There are a good many inquiries in the market for several classes of ironwork, so that orders for part, at least, should presently be in the hands of the manufacturers. The foundries are, perhaps, the most likely to be the first to feel the benefit of the turn in the market, it being a fact within my own knowledge that orders for several thousand tons of foundry work will be given out, probably locally, at the end of this week, the specifications being already in the hands of several leading producers. Orders also for other descriptions of iron and ironwork which have been withheld for a long time have now to be put into the market at the current prices, which those who are on the eve of buying believe to be as low as, or even lower than, they will be during the remaining part of the year 1875. This being so, it appears to be quite possible that we may shortly witness a considerable revival of trade, with an attendant slight augmentation of quotations for many descriptions of finished iron and ironwork.

I notice that several of the leading West Yorkshire firms have reduced the price of axles and tyres £2 per ton, commencing from this week. The firms which have taken this action are the Bowling Iron Company (Bradford), the Lowmoor Iron Company (Bradford), the Farnley Company (Leeds), Taylor Brothers (Leeds), Cooper & Company (Leeds), and Kitson & Company (Leeds).

There is a somewhat better feeling in the cast steel trade, several orders of fair proportions having been given out on local account during the past week. The Continental demand is still very quiet, and there is no general revival of the American market, but it is thought that the latter must of necessity shake off its torpor as the year advances, stocks being everywhere very low. The slight improvement in this branch is at present, however, almost wholly attributable to town orders, many of the district tool, engineering, &c., manufacturers having held back their favors as long as they possibly could in order to benefit by the expected drop in quotations—a drop which has not taken place as yet. Prices vary so greatly that it is impossible to give detailed figures here, but it may be stated that on the whole common steels are tolerably easy in price and best descriptions proportionately firm.

There is still very little inquiry for steel rails or the raw Bessemer material. Such of the larger firms as have their own collieries are now enabled to put down their quotations to about £9. 7. 6 to £9. 15/ per ton for these rails, but they have been successful in several recent competitions with the Welsh, Lancashire, and Continental producers. The imports of Spanish ores for the use of one or two of these firms are not as yet on a scale of sufficient magnitude to justify the expectations that have been formed of the results to be so obtained; but as Spain becomes more settled it will be seen to what extent and in what matter the enterprise benefits those concerned. Taking into consideration the freightage, the dues, the heavy railway charges at this end, it is almost doubtful whether it would not pay better to smelt the ores at the mines, and import the pig iron ready for the blast furnaces. The great drawback to this proposition is, of course, the cost of conveying the requisite coal or coke to Bilboa. Seeing, however, that South Wales is within two or three days' steam of the Spanish iron district, there ought not to be any insuperable difficulty in the matter, as the pig iron might be brought on the return voyages. Bearing in mind the comparative bulk of the ores as against pig iron, it would certainly appear most economical to smelt on the spot—a step which it is rumored will be taken by the three or four great British iron and steel concerns interested in the Spanish venture. British hematite ores are held at purely nominal figures, varying from 24/ to 26/ for good qualities. Hematite pig iron of West Coast production is also quoted nominally at the following prices: Maryport hematite, Nos. 1, 2 and 3, 95/; No. 4, 90/; No. 5, M and W, 90/; Bessemer, No. 1, 100/; No. 2, 97/6; and No. 3, 95 per ton; Millum Bessemer, No. 1, 95/; No. 2, 92/6; and No. 3, 90/; ordinary No. 3, 90/; No. 4 and No. 5, 87/6; mottled and white, each 105/; all on the usual terms, with an allowance for prompt cash.

The coal trade is quiet, and prices are not, generally speaking, quite so firm as they have been. There is still a pretty ready sale for house coal, a heavy tonnage of the favorite Silkstones being daily sent to the metropolis and the east coast towns. Steam coal for shipment is also in tolerably good request, at about 12/ to 13/6 per ton at the pits, but ordinary engine fuel for manufacturing purposes does not sell at all readily.

The file and saw trades are dull on the whole, many even of the larger firms in both these industries being literally without work *for positive orders.* Some of them are allowing their men to work for stock, in the hope and expectation that there will sooner or later come a time when the whole may be cleared out at a profit. I hear that some of the timber growing countries—Canada, Sweden, Norway, Russia, &c.—are good customers for large-sized circular saws, but are very indifferent purchasers of cross-cuts or smaller sizes.

The Britannia metal and silver-plated firms are all well employed. The home market takes the bulk of their productions, but there are frequent and good exports of plate to Australia, Canada, South America, India and the West Indies.

Cutlery is not an enticing subject to write about. It is difficult to pick up any fresh facts in connection therewith, the trade being so dull and flat. A correspondent signing himself "Sheffield made both haft and blade," writes to the Sheffield *Telegraph* from New York, deprecating a recently made statement that the American cutlery works could produce more goods than they could sell, and maintaining that all American cutlery, which is *meant to keep an edge*, is of necessity made from Sheffield steel, but at the same time he warns the Sheffield makers that their competitors turn out a much cleaner and better finished cheap article than they do, and that they are in danger unless they take more readily to machinery.

SOUTH STAFFORDSHIRE AND BIRMINGHAM.

There is literally no change in the general aspects of the iron trade of these districts since I last had occasion to comment upon them. Prices are firm, however, especially for the better qualities of finished iron; sheets, hoops and nail iron appear to be in most request. Much interest is naturally felt in this district as to the result of the South Wales strike. If that should be prolonged it is probable that the downward tendency of Staffordshire coal would be arrested and the scale turned in the other direction. At the annual meeting of the Staffordshire Iron Masters' Association, held at Birmingham on Thursday, the report showed that the committee for the ensuing year would be Thorneycroft & Co.; the Chillington Iron Company, Limited; John Bradley & Co.; John Bagnall & Sons, Limited; the Earl of Dudley; Messrs. W. Barrows & Son; W. & G. Firmstone; P. Williams & Sons; New British Iron Company; Groucutt & Lane; Addenbrooke & Co. and W. & J. S. Sparrow. The labors of the committee last year extended to a variety of subjects. The sliding scale for the adjustment of iron makers' wages had been adopted for one full year, from July 4th, 1874, to July 3, in the present year. It was within the power of masters or men to terminate it by giving three months notice on April 1, 1875, or on the 1st of any subsequent July, October, January or April. These results were brought about at meetings of the Wages Committee, held at Derby, London and York in the early part of the past year. The price paid for puddling to January 3, 1874, was 13/3; from January 3, 1874, to April, 1874, 12/6; April 4, 1874, to July 4, 1874, 11/6; July 4, 1874, to October 3, 1874, 11/9; October 3, 1874, to January 4, 1875, 10/9; January 4, 1875, to April 3, 1875, 9/9. The wages of blast furnace men were reduced 10 per cent. in March, and again 10 per cent. in September. The report was adopted, and the trienial period for which the last chairman was appointed having expired, it was resolved that Mr. J. P. Hunt, of the New British Iron Company, Corngraves, be the chairman for the ensuing three years. It was decided also to merge the office of treasurer in that of secretary, which continues to be held by Mr. Daniel Jones.

The whole of the Birmingham hardware industries are steady, and exhibit an improvement as compared with the period immediately preceding Christmas. There is an increasing demand for builders' iron work, in sympathy with the marked improvement of the building trades throughout the country, and there is a very encouraging inquiry for agricultural hardwares, edge tools, roofing sheets, hollow-ware and tin plate goods. Wire drawers are doing well in fencing and rivet wire, and the brass founders are very actively engaged indeed. Shipping orders for large lots of gas tubes can now be placed at about 2½ per cent. discount, under recent figures, and several kinds of wire are being shaded to the extent of 2½ to 5 per cent.

TRADE IN SOUTH WALES

is, as a matter of course, so completely paralyzed by the great strike, or lock-out, whichever is the more appropriate term, that there is literally no work being done at most of the iron works. At some few establishments great stacks of fuel have been accumulated in order to provide for such a contingency as that which has now come about; hence, in these instances, work will not be wholly stopped until the fuel supply is exhausted. Outside the ranks of the Associated Coal Masters (whose pits produce 12,000,000 tons yearly), there are also a few masters whose collieries turn out 3,000,000 tons per annum. These are being worked night and day, to the great advantage of their proprietors, the partial satisfaction of the export trade, and the supplying of the household demands of the district. Tin plates are very firmly held, in consequence of the probable stoppage of production, should the strike last.

THE METAL MARKETS

have been quiet during the past week, with no great amount of business done, and a recession of prices in the case of lead. Messrs. Van Dadelszen & North's report says: *Copper.*—There has been a dragging business during the past week, and prices have undergone no change of importance. Chili bars have been sold to a moderate extent from £83 to £83. 10/, and named brands at £84. Some parcels afloat, and with three months prompt, have realized £83. 10/. In Australian, 25 tons Wallaroo reported, at £93. Burra, £91 nominally. English raw and manufactured quiet, the demand being restricted. *Tin.*—The first Banca sale this year went off at an average of £56. 10/, equal to about £98 laid down here. Our market remains quiet. Straits, on the spot, £92. 10/, and to arrive, £91. 10/. Australian, £90. 10/ to £91. English tin remains quiet. Tin plates fully maintain previous quotations, and are in good demand. *Lead* is more plentiful, and has further declined: quotation now, £23 to £23. 5/ for good soft English pig; £22. 10/ Spanish. *Spelter.*—The price remains quite nominal. Silesian, £23. 15/ to £24; and other foreign sorts about the same price. *Quicksilver*, £22 10/.

The weekly remarks of the *Mining Journal* on Metals are these: *Copper.*—The following statistics in connection with the American copper trade will be of interest to our readers. In the beginning of the year 1874 the stock of American copper held in America was estimated at 10,000,000 lbs. The produce of Lake Superior during the year amounted to 33,000,000 lbs.; that of Tennesee and Baltimore, 4,000,000 lbs., giving a total of stock and production of 47,000,000 lbs. On the other side of the account the consumption during the year is estimated at 28,000,000 lbs., and the export at 9,000,000 lbs., leaving the stock in the beginning of the present year 10,000,000 lbs., being the same as it was in the beginning of 1874; of this scarcely 4,000,000 lbs. remain in producers' hands. It appears that the demand for copper materially improved during the latter part of 1874, and that since August last a considerable advance has taken place in the manufacture of brass and copper. The demand for copper has also been materially extended by the requirements of railways and for warlike purposes, not only in America, but throughout Europe; consequently an increased export of 4000 tons of ingot copper from America resulted not in an increase of stocks in England, but in the reverse. The position of the American copper market is reported to be very sound. The stocks of both raw and manufactured copper are said to be moderate; the price is quoted 11½c. per lb. lower than at the same period last year, and the demand for the manufacture of brass and copper goods is now very great. In the London market there is a lack of animation, and though quotations keep pretty steady the actual business transacted is confined within narrow limits as regards raw copper. At the beginning of the week a small business was transacted in g. o. b., usual cash terms, at £83. 10/. Nearly 1300 tons of ore were sold at the Swansea ticketing, of an average produce of 16 11-16 for an average price of 15/11¾; and during the week quotations for Chili bars have remained about the same. English tough copper is quoted £89; best selected, £90; sheets, 4 by 4, £96; and yellow metal, 8¼d., and sellers are unable to accept lower terms, and at the same time do a remunerative business. *Lead.*—The market has been very quiet throughout the week, but quotations remain nominally the same. It is probable that sellers might submit to a trifling concession with a view to secure orders. Good soft English is quoted £23 to £23. 5/, and soft Spanish, £22. 5/ to £22. 10/. *Spelter.*—There are no transactions reported in Silesian, which is dull. English hard spelter has changed hands at £17, and is firmly held. *Zinc* has realized at public auction £28. 15/ to £28. 10/. *Quicksilver.*—During the week this metal has been quoted £23 per flask, since which £22. 10/ has been accepted. *Tin.*—The market opened active, and a fair business in Straits for arrival or forward delivery was done, at an average price of about £92. On Wednesday the report of the sale of the Dutch Trading Company was published, the quantity sold being 22,600 slabs of Banca, at an average equal to £98 laid down here. After the announcement, a small quantity of Straits changed hands at £92. 10/, cash, and £91. 10/, January shipments. Australian, £90. 10/ to £91. 10/, and £92, according to quality, and for February delivery, £90. Since then the market has remained steady, at previous quotations, but without much doing. *Tin Plates.*—As orders are being worked off, makers would be glad to book forward contracts. The market is scarcely so firm as it has been, and some slight concession in price might be submitted to in order to do business. *Spelter.*—The demand for hard spelter keeps brisk, and £17. 10/ has been obtained for twelve months' contracts. Higher rates are at present being asked for foreign spelter on the other side than what are obtainable here, and, consequently, it is expected that less will be exported for a time, in the hopes of raising the markets here.

LATEST FROM LIVERPOOL.

Messrs. Harrington, Hovan & Co.'s circular, remarks: *Copper* has been steady throughout the fortnight, but without animation. On the 21st, cablegram from Valparaiso announced charters for the fortnight, ending 15th instant, as 2600 tons fine copper; but notwithstanding these comparatively heavy charters, prices were tolerably well maintained. On the 28th the bank rate was reduced from 4 per cent. to 3 per cent.; values, however, were not enhanced by this movement. *Lead.*—Market dull at £23 for ordinary shipping brands. *Spelter.*—Market steady at £23. 10/ for ordinary Silesian brands.

Latest Liverpool metal and iron quotations are:

Iron: f. o b in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Merchant bar	8	15	0 @	9	0	0
Merchant bar, in Wales	8	5	0 @	8	10	0
Staffordshire	9	5	0 @	11	15	0
Hoop	10	15	0 @	11	15	0
Sheet	12	10	0 @	13	10	0
Nail rod	10	0	0 @	10	10	0
Bar, best crown	9	5	0 @	9	10	0
Boiler plates	12	0	0 @	13	5	0

Tin Plates; f. o. b. in Liverpool, per box.

	£	s.	d.	£	s.	d.
Charcoal, I. C	1	14	0 @	1	17	0
Coke, I. C	1	8	0 @	1	10	0

Copper: Delivered in Liverpool, per ton.

Bolt and Sheathing	£100
Tile	96
Tough cake	97
Best selected	99

Requirements of the Pig Iron Trade.

EDWARD J. HALL., JR., Blast Furnace Engineer.

It seems to be inevitable that all periods of unusual activity in any branch of trade must be followed by a season of depression, and it is not probable that any system of political economy or legislative control will ever succeed in regulating the springs of trade, or prevent these disagreeable, although not always unwholesome, events.

Doubtless a careful study of the causes, nature and influence of panics has done, and will do, much to modify their severity, neutralize their effects, and hasten the restoration of general prosperity; at present, however, the main question is not what causes panics, but how may we overcome the evil results existing from the last one.

Not iron only, but every branch of trade has been and is suffering more or less. Iron is a representative industry, and the one most seriously affected; as a producer or consumer, every citizen has a vital interest in its condition.

A moment's reflection will convince anyone that the present low prices are not advantageous to the consumer. High prices almost invariably accompany general activity and prosperity; exchanges are rapid, labor is well paid and productive. Certainly a cheap article is of no advantage to one who cannot use it, or has no money to pay for it. Our mills, foundries, railroads, merchants and farmers, are as directly interested in securing a remunerative price for pig iron as the furnace owners themselves, for a revival of iron means a general revival of all industries.

In earlier stages of our iron production its most serious danger was from foreign competition, and to guard against this Congress interposed a protective tariff. Its effects are seen in the vast manufactories which are yearly adding millions to the public wealth, by employing, at fair prices, all available labor in the channels best calculated to strengthen and enrich the whole country. In this general good the manufacturers share has often failed, and it has never been greater than was absolutely necessary to carry the trade through its seasons of depression, and keep it in existance. The almost universal distributions of ore and fuel renders it morally impossible ever to make the manufacture of pig iron a monopoly, and home competition will always keep the price at the lowest possible rate.

Now, even if Congress could strengthen the market by an increased tariff, it would be a doubtful policy for three reasons:

1st. It would give an unhealthy stimulus to native production, which would destroy the market more thoroughly than it is at present.

2d. It would disturb the slow but certain revival of business by preventing the adjustment of the prices of labor and raw material to the present standard of values.

3d. It would incite the advocates of free trade to more determined efforts, and be an additional argument to influence the next Congress, which is probably already inclined in that direction.

When government aid was extended in times past circumstances were different; our own furnaces were supplying less than one-half the amount consumed, and it was absolutely necessary to control the price of imported iron, not only for the sake of encouraging native production, but also to keep down prices, and guard the country from being at one time flooded with iron at a price low enough to ruin all our manufacturers, at another compelled to pay famine rates for an article of necessity.

In 1856, with a consumption of one and one-half millions of tons, just about one-half was produced at home; in 1873, with a consumption of three and one-half millions, nearly three millions were produced here; in 1874, not much over 10 per cent. was imported. Unless prices advance very materially during the present year, the ratio will continue to decrease. It is evident that home production, not foreign competition, is now the controlling influence.

The best informed English authorities admit that Great Britain does not expect hereafter to find a large market in the United States, and, while there will doubtless be for some years importations of special articles which we cannot yet produce at prices to control the market, or which consumers fancy cannot be made here of the best quality, the general market price will be regulated by our own circumstances, so long as the present tariff is let alone.

In ten years it will be of no consequence to the American iron master whether his products pay a high import duty or are on the free list. Congress can best help business at this time by letting the tariff alone; by carrying on such internal improvements as shall tend to cheapen transportation; by refusing to "invest" in wild-cat railroad and steamship speculations, and by giving us, so far as it may be possible in the ceaseless whirl of political changes, such a definite policy in financial and other matters as shall enable capital to invest in the future with some degree of confidence.

Many iron men seem to think that overproduction is the cause of all our troubles. Doubtless the sudden expansion of producing facilities has depressed the market, but the remedy must be found in enlarging the consumption and decreasing the cost of production rather than in limiting its amount.

It is difficult to estimate our present furnace capacity; probably it would be able to meet a demand for 3,500,000 tons, but market for

3,000,000 tons would give all good furnaces a fair share of trade. There are, no doubt, many furnaces which, owing to location, construction or management, require high prices in order to pay expenses, but they are exceptional cases, which are found in every branch of trade, and have no claim on public consideration.

If the croakers who are always predicting universal ruin will raise their eyes from these inevitable and deserved failures and take a broader view of the trade prospects, possibly the horizon may seem a little brighter.

With general trade in the normal position, which it must regain before long, the United States will consume at least three million tons, and this will be yearly increasing, or else we have entered upon an era in which the past history of the world is to be reversed.

This country is certainly able to maintain its share of the whole production, and if our proportion be not very largely increased, the fault will be our own. In 1840 the whole world made less than 1,000,000 tons; in 1856 the production was 7,000,000 tons; in 1873, 7,000,000. Is not 25,000,000 a moderate estimate for 1900?

England, so far, has been able to supply about one-half, but that rate cannot be kept up in the face of coming competition from this and other countries. America now produces about one-fifth, and ought then to produce one-third, because we combine with our capacity for production the no less important facilities for supplying the necessary population with food obtained at home.

Our iron masters must no longer depend so entirely on home consumption, because, as is too evident at the present time, there is such an equilibrium between supply and demand that any temporary cessation of the latter immediately overstocks the market. Although lately almost entirely shut out of the American trade, the British surplus has found its way into other markets, extending old trade and developing new territory.

With this rapid growth of trade, prices must inevitably tend to equalization in the great producing countries—Great Britain, the United States, France and Germany. Nearly all the rest of the world obtains its iron from them, and must, to a very great extent, do so for many years to come. As yet steam is used to any extent in comparatively few nations for manufacturing or transportation; its introduction will be chiefly controlled by Great Britain and the United States. In the manufactures of charcoal iron we ought to, and can, build up a large export trade even with the great iron manufacturing countries, while in railroad iron, machinery and household and agricultural implements we ought, at least, to control the South American trade.

Now, in order to secure this, it is evident that instead of having the price of iron raised by government action or trade combination, it must be kept at the lowest remunerative figure by reducing the cost of production.

So far, the greater part of this burden has fallen on the manufacturers, while the producers of raw material and the laboring classes have been obstinately closing their eyes to the true condition of affairs, and refusing to take the steps necessary to keep the wheels in motion. This ostrich like hiding their heads in the sand can no longer protect them, and the stagnation will last until the remedy is applied away down to the roots.

Labor must be reduced, and every encouragement should be given to the invention and introduction of labor saving machinery in every department of industry. The miners of coal and ore must reduce their prices, in order to secure the immense ultimate gain resulting from increased business.

With coke delivered in Pittsburgh at $2·50 per ton, anthracite iron manufacturers cannot hope to develop much trade and pay present prices for coal. The reduction of miner's wages is simply an evasion of the popular demand, and will not reduce the cost at tide water 5 per cent. If they are in earnest, let them make a substantial reduction of at least one dollar, which can well be afforded, and it will prove to be a profitable as well as a politic move.

Ore miners will be left in a position in which they must either reduce prices and grade more carefully, or else shut down and wait indefinitely for trade to revive.

About one-fifth of our iron is made from Lake Superior ores, and they could be delivered at any point on the lake for $7·50 per ton. With lake ore at that price, and other ores in the resulting proportion, it would, under present conditions, be a fair rate.

Of course the burden of these reductions cannot fall entirely on the mine owners; the transportation companies will have to bear their share, and they can well afford to do so, for by no means all of the large profit at one time made on pig iron went into the pockets of the furnace owners. A review of prices for the last five years shows that the average margin to the furnace men has not exceeded five dollars, while now it is less than nothing. It is not the interest of any to drive them to the wall, and it is far better that liberal concessions should be made by all and business kept in motion. The reductions are inevitable, and iron masters will have to unite in demanding them if they are not granted without. No doubt the process is a hard one, and must be attended by some losses, but in delaying it we are only imitating, on a larger scale, the justly-condemned folly of the Pittsburgh puddlers.

Furnace owners have still much room for improvement in working; nearly all furnaces use too much labor and stock in producing a ton of iron. Probably blast furnace wages are as low as they can be put, for they are now proportionately lower than in other branches, but in the use of labor-saving appliances, and the weeding out of unnecessary and incompetent men, something may still be done.

The great saving at the furnace is going to be made by more skillful management and improved construction. I have before me the report of an anthracite furnace, which is by no means a model in construction, that has been running on one blast since 1871, and is now, with a hot blast below 600°, using only 2700 pounds of coal to a gross ton of No. 2 Foundry Iron. There are furnaces which can show an even better result than this, and yet, if an average were given of all the anthracite stocks, I doubt if it would fall below 4000 pounds. In the anthracite district of South Wales 2 tons 16 cwt. was the average for 1872, and 2 tons 10 cwt. for 1873.

The average for twenty years of a large number of our furnaces is given by Mr. Baker as 2 tons, 3 qrs., 5 lbs. It is evident that there is considerable room for improvement, and it is to be effected by more skillful blowing, better proportions and construction, good heating ovens and engines, and *better selections of ore.*

Scientific investigation and research must be encouraged, the old rule-of-thumb methods abandoned, and petty jealouses and strife must give place to united thought and action in the great struggle to obtain a large share of the world's trade.

A Wonderful Vault.

The fireproof vault in our court house, says the Virginia (Nevada) *Enterprise*, in which are kept the books, records, and all of the public documents, is a vault, the like of which is to be seen nowhere else in the world. It was planned and built by ex-County Commissioner Andrew Fraser. Mr. Fraser was the leading spirit in the late able Board of County Commissioners in planning and perfecting the many improvements that have been made in all the county buildings during the past year. He is chief engineer of the Gould & Curry Mining Company, and is a most skillful machinist and ingenious mechanic. The county was sadly in need of a large fire-proof vault in which to keep its books, the almost priceless mining records, and the many valuable documents of all kinds. Mr. Fraser's mind began to run on vaults, and after studying all of the vaults that had ever been built or invented, he hit upon a vault unlike any he had ever seen or heard of, a new invention, in fact, for which he has secured a patent. His vault consists of two or three parts which travel about, which are sometimes separated and sometimes united. Of nights all the parts get together and go off to bed away down in the basement of the Court House. The principal parts are the vault proper, which is down in the basement—we might say down in the ground. This is a massive brick structure, the only entrance to which resembles the top of a very large chimney. Then we have the book-case in which are placed the books and documents, a case which not only holds all of the books and documents at present in the keeping of the county, but which is large enough to hold all that will be accumulated for many years to come. Next we have the cover of the vault, that part which covers the chimney-like opening at its top. At night the book-case is down in the vault, where it is shut in by the cover, a massive structure made of two thickness of heavy boiler iron with 8 inches of cement between. This cover, which is in the shape of a scow turned bottom up, is heavily riveted in all directions, and is a ponderous affair. It was manufactured in Cincinnati, O., after drawings furnished by Mr. Fraser. In the morning the janitor of the building takes hold of a crank and begins turning it. This arouses the book case. It gets up, and taking its big iron cover upon its head, as though it was a hat, it leaves the vault and the basement of the building, going to its post on the second floor. There it stands all day, with one face in the office of the county clerk, and the other in the office of the county recorder, holding out all the books and documents ready to the hands of the clerk. All day it stands in this position, with its big iron hat (the vault cover) on its head. At night the janitor again turns the crank and the big book case knows its bed time. It starts at once for the basement. Down, down it goes to the vault, into the depths of which it disappears, leaving its big hat to cover the hole by which it entered, and there it roosts all night in its hole in the ground.

By a very similar arrangement of clock-work this book case could be made to open itself—getting up at the proper hour in the morning and going to the office with its tons of books and documents, remaining on duty all day, and then at a certain time in the evening, suddenly making its bow, and descending to the basement, there to shut itself up in its hole. All this it might be easily made to do, so that no man need never look after it or think of it. All that would be required would be a small pipe from one of the water mains, and a simple bit of clock work to keep the time and let on and shut off the water. This additional mechanism has been thought of by Mr. Fraser, and is included in his patent, but for economical reasons was not put in here, the County Commissioners thinking it quite as well for the janitor to run the apparatus by means of a crank. Even as it stands the vault is really a wonderful invention, yet is simplicity itself.

Railroads.—In Australia, there are in the aggregate 1257 miles of railroad, viz: In New South Wales, 402; in Victoria, 486; in South Australia, 133; and in Queensland, 236 miles. Australia is destined to become a great railroad country. In the adjoining Island of Tasmania there are 45 miles, and in New Zealand 147 miles. In the latter series of islands the system projected will have an extension of 1800 miles, of which about 850 are now under construction. Noting the fact that the length of railroads in Europe and the United States is about equal, or say (as an estimate) 77,500 miles, in each, or in the aggregate 155,000 miles, we may reckon that the other parts of the world, at the close of 1874, had 25,000 miles, viz: Foreign America, 12,500; Asia, 7500; Africa, 2500; and Australia, etc., 2500. This estimate is not extravagant. If we, here in the United States, have not done much in the way of railroad construction during the past year, the extension of foreign lines has been repeatedly reported in both foreign and home newspapers. If these deductions are correct, or nearly correct, we may estimate the aggregate length of railroads now in existence throughout the world at from 175,000 to 180,000 miles. About one-fourth part of this extension may be said to be supplied with more than one track; and with sidings to the extent of one in ten miles. It is, therefore, obvious that the total of track now in use is not less than 240,000 to 250,000 miles. In these calculations we have not included anything for city or suburban railroads, which are now in use in all civilized countries.

Blasting Stumps.

The London *Agricultural Gazette* describes as follows a method of cleaning land by means of giant powder:

A hole is bored with a common auger into the center of a stump, and a charge of giant powder, in a cartridge already prepared to fit the hole, is inserted. An iron tapering screw, made to fit a winch, is then tightly screwed into the hole. The screw has a hole through its center, by which a fuse is carried to the charge. The charge is exploded in the usual manner, and the stump is blown to pieces, or lifted out of its place. It may be well to caution those who undertake this work to exercise the greatest care, and to keep a good lookout for the screw, as it will sometimes be blown to a considerable distance if too large a charge is used. Greater useful effect is gained by moderate charges. Excessive charges do very poor execution, either blowing out the screw or a portion of the stump, and leaving the larger portion shattered, but still in a condition which makes their removal very difficult.

By another plan a hole is punched in the earth beneath the center of the stump, and between two of the largest roots. A cartridge of giant powder is placed at the bottom of the hole, with a fuse attached to it. It is stated that the powder, when it explodes, throws the stump completely from the ground in every case, and frequently splits it into several portions. With common blasting powder this can not be done. Its explosion is not sufficiently rapid, and the earth is simply removed from the stump. But with the many times more rapid and forcible explosion of the Giant powder, the loose earth offers sufficient resistance, and the force of the explosion is exerted directly upward, with the best effect upon the stump or rock. It matters not whether the object to be removed be a stump or a rock, the effect is the same.

This powder can be used economically on farms, as it now is in hydraulic mines, in breaking up large rocks which need removal, as well as removing stumps. It is very simple and safe, and in many localities where ground is being cleaned, would be of great assistance.

"Rollways" vs. Railways.—A Chicago engineer read a detailed account of a new system of transportation called the Rollway, at a recent meeting of the Civil Engineers' Club of the Northwest. The system may be described as revolutionary, for it is proposed to put the wheels on the ground and the tracks on the cars. The truck of "the rollway" consists of a continuous series of pairs of small wheels or rollers, set in timbers like railroad ties. Between the two lines of rollers there is a single guide rail the top of which is three or four inches above the level of the rollers. The cars are like the cars now in use, with the exception that instead of having wheels they have timber runners, shod with steel plates. Each car is to be supported on at least three pairs of wheels or rollers at a time. At curves and turn outs the faces of the way rollers are widened, so as to give support to the runners when the direction of the latter is being changed. Under both ends of each car there is a pair of guide rollers, acting on both sides of the guide rail, to prevent the cars from running off the line of way rollers. The locomotive is built on the same general principle, its driving wheels bearing on the gauge rail. The inventor of this system claims that it is cheaper than that of the railway, although it is difficult to see why there should be any great difference in first cost. The inventor claims that the earthwork on a rollway is less than for a railway, and that the iron-work costs much less, the way rollers costing only $1320 to the mile. In a comparison of the cost and capacity of the two systems, he says that the cost of the rolling superstructure and rolling stock is about one-half that of railways, the dead weight of trains about one-half, the resistance of loaded trains one-third, and the starting resistance one-fifth. In addition to all this he claims that the rollway is safer, smoother, more durable, and trains can be run at the same or greater rates of speed than on railroads. These calculations, however, may turn out to be very wide of the mark after experience of such a roadway in actual use.

The First Planing Machine.—The first planing machine ever made was, according to the London *Iron Trade Exchange*, constructed in the Holland street works of John Rennie, the elder. "In March, 1814 (and we copy from an original memorandum book of the late George Rennie), the following plan was adopted for 'chipping' the cast iron sides of a new lathe: The sides are placed close together, with their faces upward. Two planks of elm, one on each side, are bolted with their edges truly placed end upward. Upon the edges of the elm planks run four wheels on axles, which support a truck of oak. To the truck is fixed a slide rest, to which is attached a cutting tool. The truck is well loaded with weights, and pulled along the surface of the elm planks by means of a crab and chain. Thus the tool, in fact planes the iron lathe beds straight." This was, in fact, the first planing machine, crude and rude as it was, and from Whitworth, to whom the original apparatus was shown, subsequently made a self-acting machine. We all know how important a tool it has become, and the wondrous saving it effects in the manufacture of nearly every kind of machinery.

The Omaha Smelting and Refining Works have been in operation four years. The works turned out $1,000,000 in 1873, and the operations during 1874 may be briefly stated thus: Amount of base bullion separated and refined, 7000 tons; ore smelted, 2000 tons; coal and coke consumed, 6715 tons; value of gold and silver produced, $1,356,000; lead shipments, 6500 tons, valued at $800,000; wages paid $65,000; paid on freight, $250,000; for expressage, $10,000.

In the manufacture of rolled, cast, forged and pig iron, the total product of the State of Maine for the past year will exceed $2,300,000. A Camden concern has turned several anchors weighing from 4000 to 6000 pounds. A large forging establishment has been built at Calais. The only spike factory in Maine is located at Camden, and has manufactured daily over 2500 spikes. The Pembroke Iron Works have only run about half time, manufacturing some 3500 tons of iron and some 7000 kegs of nails, the total value of which is $300,000. The Katahdin Iron Works have been enlarged and improved. Ten tons daily have been manufactured, for which there is a good demand.

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—₱ ton.						
Best Selected	92	0	0	94	0	0
Tough Cake & Tile	90	0	0	92	0	0
Sheathing and Sheets	96	0	0	97	0	0
Bolts	99	0	0	100	0	0
Bottoms	99	0	0	100	0	0
Old	85	0	0	87	0	0
Australian, Wallaroo	92	0	0	93	10	0
" other brands	91	0	0	92	0	0
Chili bars, g. o. b	88	0	0	88	10	0
Wire	₱ lb.	0	1	0	—	
Tubes	"	0	1	¼	—	
Brass—₱ lb.						
Sheets		0	0	9¼	0	0 10¼
Wire		0	0	9¼	0	0 0
Tubes		0	0	12	0	0 12½
Yellow Metal Sheathing		0	0	8¼	0	0 8¾
Sheets		0	0	8¼	0	0 0
Spelter—₱ ton.						
Foreign on the spot		23	15	0	24	0 0
" to arrive		23	15	0	23	17 6
Zinc—₱ ton.						
In Sheets		32	10	0	33	0 0
Quicksilver—₱ bottle.		24	0	0		
Tin—₱ ton.						
English Blocks		100	0	0	—	
Ditto Bars (in brls.)		101	0	0	—	
Ditto Refined		102	0	0	—	
Banca		101	0	0	102	0 0
Straits		91	10	0	92	0 0
Australian		90	10	0	91	0 0
Tin Plates—₱ box.						
IC Charcoal	1 qual.	1	18	0		
IX "	1 qual.	2	4	0		
IC "	2 qual.	1	16	0	1	17 0
IX "	2 qual.	2	2	0	2	3 0
IC Coke		1	7	6	1	8 6
IX "		1	13	6	1	14 6
Canada Plates	₱ ton.	18	10	0	19	0 0
" at works		18	0	0	18	10 0
Iron—₱ ton.						
Bars Welsh, in London		8	17	6	—	
" to arrive		8	12	6	9	0 0
Nail Rods		9	10	0	—	
Nail Rods, Staff'd in L'ndon		10	1	0	—	
Bars		10	10	0	11	0 0
Hoops		11	10	0	12	0 0
Bars at Works		9	10	0	11	0 0
Hoops ditto		10	10	0	11	10 0
Sheets, single, and plates		12	10	0	13	15 0
Pig, No. 1, in Wales		5	0	0	6	10 0
Refined metal ditto		7	0	0	8	0 0
Bars, common ditto		7	15	0	8	0 0
Do. merchant, Tyne or Tees		8	0	0	8	10 0
Ditto, Railway, in Wales		6	15	0	7	0 0
Ditto, Swedish, in London		16	0	0	17	0 0
To arrive		16	10	0	—	
Pig, No. 1, in Clyde		4	7	0	5	12 6
Do. f.o.b., Tyne or Tees		4	0	0	4	5 0
Ditto, Nos. 3, 4, f.o.b.		3	10	0	4	0 0
Railway Chairs		5	0	0	5	5 0
" Spikes		12	10	0	14	0 0
Indian Ch'coal Pigs in L'don		8	0	0	10	0 0
Steel—₱ ton.						
Swedish, in kegs (rolled)			—		—	
Ditto (hammered)		19	0	0	20	0 0
Ditto, in faggots		20	10	0		
English, spring		19	0	0	24	0 0
Lead—₱ ton						
English Pig, common		23	5	0		
Ditto, LB		23	10	0	nom.	
Ditto, WB		24	0	0		
Ditto, Sheet		24	15	0		
Ditto, Red Lead		25	0	0		
Ditto, White		30	0	0	32	0 0
Ditto, Patent Shot		26	10	0	27	0 0
Spanish		24	15	0		

* At the works, 1s. to 1s. 6d. per ton less. Terne plates 3s. per box below tin plates of similar brands.
† Add 6s. for each X.

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BOYD & CHASE,
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Also, *Hindostan, Sand* and *other Stone.*
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Grain Scoops
AND
Back Strap Shovels,
WITH
PATENT
CORRUGATED STRAPS,

An improvement giving great strength to the weak point of ordinary shovels. The corrugation is from A to B on both sides, not sensibly increasing the size of handle.

Hardware buyers' attention is called to the fact that this improvement will command the market.

We are prepared to fill orders for Ames', Rowland's, and Myers & Arnor's Scoops and Back Straps, with the patent Corrugated Straps, at $1 per doz., net, above *prices of regular goods*, shipping direct from the factories. Sample orders asked.

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SOLICITORS OF
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Manufacturers of
IMPROVED WOOD TOOLS.
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Hardware and Agricultural Implement dealers are offered in the above an article that is now a staple in the trade, having been sold the past eight years from the Atlantic to the Pacific. It is correct in principle, and manufactured in the most substantial and handsome manner.

Send for a Descriptive Circular.

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BAKER & HAMILTON, - - San Francisco, Cal.

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MANUFACTURERS OF
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Guy C. Hotchkiss, Field & Co.,

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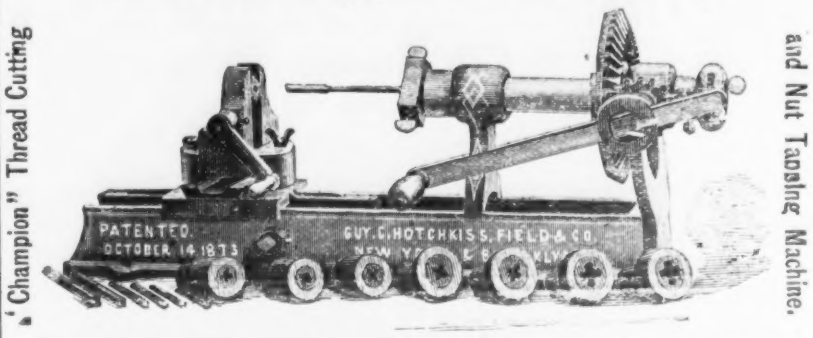
"Champion" Thread Cutting and Nut Tapping Machine.



This machine has revolving and sliding jams, which enables the operator to cut all kinds work, n matter how irregular in shape it may be. It cuts a perfect thread at once going over. As much work can be done in one hour by this machine as in a day with stocks and dies. Send for Circular.

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No. 1, weight	16 lbs.,	cuts	¼x¾	inch, or ¼	inch round or square	Price	$25·00
No. 2, "	165 "	"	½x3	" ½	" "	"	50·00
No. 3, "	350 "	"	¾x4	" 1	" "	"	75·00

This is by far the most powerful Iron Cutter in use which can be worked by hand, having three times the capacity of any other machine which sells at the same price. The No. 3 machine occupies a space of 12x30 inches; when in use additional space must be had for the lever to work in. We send two sets of knives with each machine—one for square and flat, the other for round iron and steel. By using the knives adapted to it, round iron is cut without being flattened. One man can cut the largest size iron named above, but two would be required for steady work. It does not take a minute to change the knives or to shift the machine from large to small sizes.

Many times we go without iron rather than ask a hardware dealer to cut us off such a piece as we want, it seems to be such hard work for them to do it with cold chisels. No dealer with this machine in his store will look sad when you ask for half a bar of iron, as he can furnish it in two seconds, with no waiting on your part or trouble on his. The cost of cold chisels will more than pay the interest on this machine in almost any iron store. In all kinds of shops where iron and steel are to be cut this machine will soon pay for itself. We have a large number of letters, from persons who are using the machine, speaking of it in the highest terms, and we can truthfully say that we have never put a new machine upon the market which worked its way more rapidly and surely into public favor than this one.

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These Anvils are manufactured at the oldest Anvil Factory in this country They are *superior* to the best English, or other Anvils, on account of the peculiar process of their manufacture (invented and used only by this concern), and from the quality of the materials employed.

The best English Anvils, after a time, become hollowing on the face by continued hammering in use, on account of the fibrous nature of the wrought iron—causing it to "settle" under the face.

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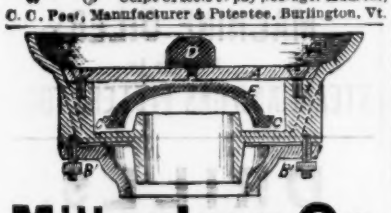

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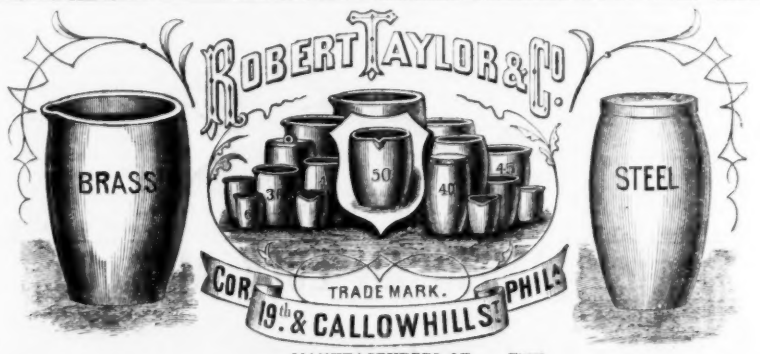

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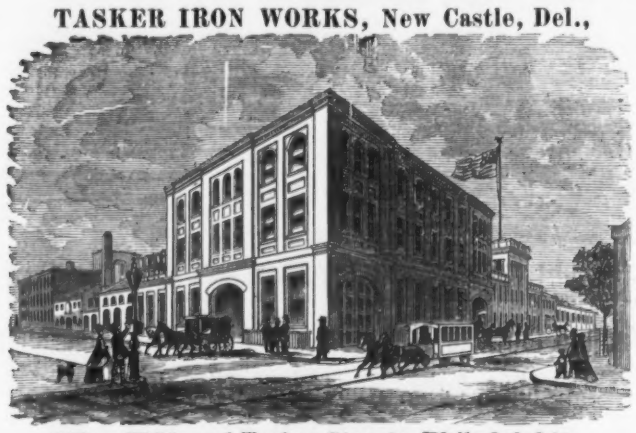

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FELTER'S

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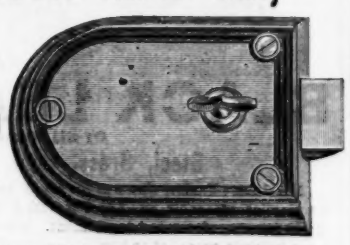

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Store Door Locks, Night Latches, Drawer, Desk and Pad Locks,

All of which are furnished with

SMALL, FLAT, AMERICAN STERLING METAL KEYS,

Which are stronger than steel, ***and cannot be affected by rust***, and will remain bright and clear under all ordinary circumstances.

A candid examination will convince the most unbelieving, that for simplicity, durability, convenience, and safety, they challenge comparison with any now before the public. Being made entirely by new and expensive machinery, especially constructed to manufacture them, ***they will rival the best made Locks in Finish and perfect operation.***

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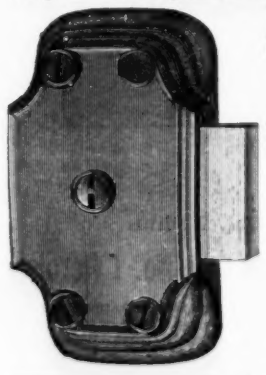

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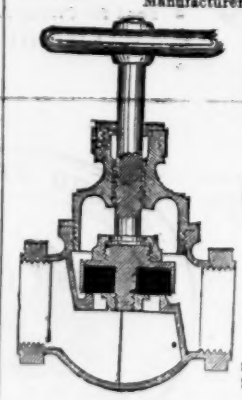

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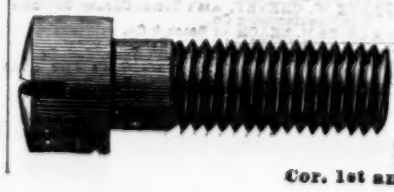

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Whittier Machine Co., 1176 Front, Boston, Mass.....28
Wood Thomas, 2106 Wood, Phila.....39

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American Screw Co., Providence, R. I.....13
Lyon & Fellows Mfg. Co., Williamsburg, N. Y.....26
Reynolds & Co., New Haven, Conn.....4
Rochester Machine Screw Co., Rochester, N. Y.....13

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Cort N. L. & Co., 220 & 222 Water, N. Y.....2
Crane U. O., 104 John, N. Y.....4
Crocker Bros., 32 Cliff, N. Y.....9
Gregg H. L. Co., 148 Walnut, Phila.....5
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2
Purves A. & Son, cor. South and Penn, Phila.....16
Quincy J. W., 98 William, N. Y.....2
Sturges Frank & Co., 72, 74 & 76 Lake, Chicago.....3
Thomson A. A. & Co., 213 and 215 Water, N. Y.....2
Van Wart & McCoy, 134 and 136 Duane, N. Y.....2

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Maynard & Van Rensselaer, 24 Cliff, N. Y.....19
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Roseberry Geo. D., Pottsville, Pa.....4

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Joseph Boyd's Sons, 12 Franklin N. Y.....31

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Union Hardware Co., 140 Chambers, N. Y.....38

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Metropolitan Nickel Plating Works, 8 Reade.....11
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Haskell W. H. & Co., Pawtucket, R. I.....13
Hoopes & Townsend, 1330 Buttonwood, Phila.....12
Lewis, Oliver & Phillips, Pittsburgh, Pa.....13
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Russell, Birdsall & Ward, Port Chester, N. Y.....40
Plumb, Burdict & Barnard, Buffalo, N. Y.....40
Shelton Co., Birmingham, Conn.....11
Sternbergn J. H., Reading, Pa.....12
Union Nut Co., 78 Beekman N. Y.....26

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Blake Crusher Co., New Haven, Ct.....38

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Morris, Tasker & Co., 15 Gold, N. Y.....26
National Tube Works Co., 78 William, N. Y.....26
Starr Jesse W. & Sons, Camden N. J.....6
Warren Foundry & Mach. Co., Phillipsburg, N. J ...26
Wood R. D. & Co., 173 Broadway, N. Y.....5

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Canfield John & Co., 1821 Fairmount Ave., Phila.....33

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Buck Bros., Millbury, Mass.....11
H. Chapin's Son, Pine Meadow, Conn.....16
Middletown Tool Co., Middletown, Conn.....33

Planes, *Manufacturers of.*
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Greenfield Tool Co., Greenfield, Mass.....34
Stanley Rule & Level Co., 35 Chambers, N. Y.....36

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Rogers & Bro., 208 Broadway.....11

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Douglas W. & B., Middletown, Conn.....7
Union Mfg. Co., 99 Chambers, N. Y.....7
Valley Mch. Co., Easthampton, Mass.....7

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Brown Edward, 311 Walnut, Phila.....

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Potter, Hoffman & Co., 110 Liberty, N. Y.....6

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Moss F. W., 80 John, N. Y.....36
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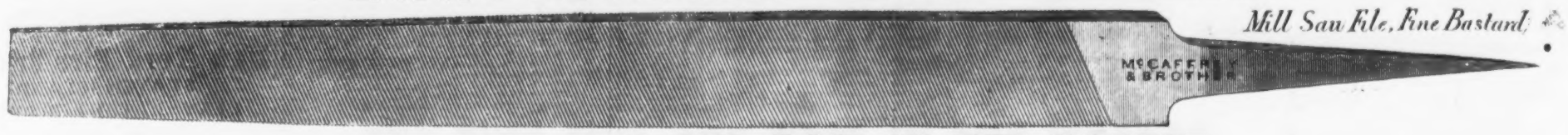

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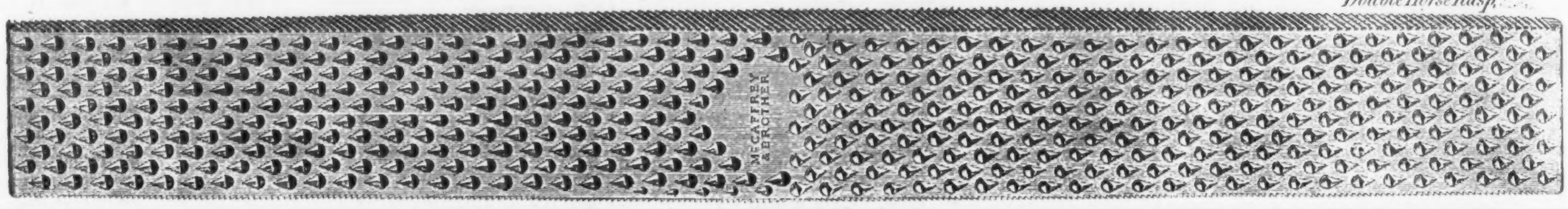

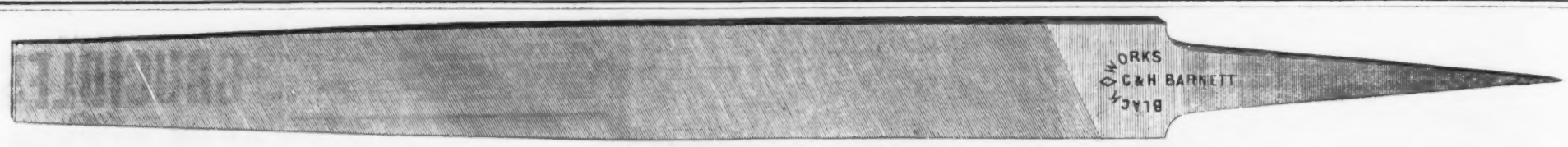

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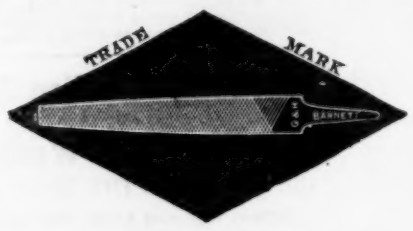

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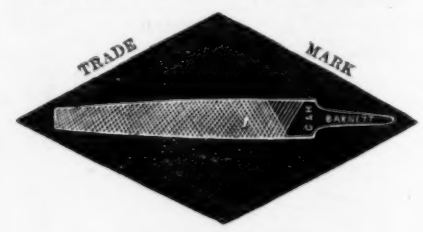

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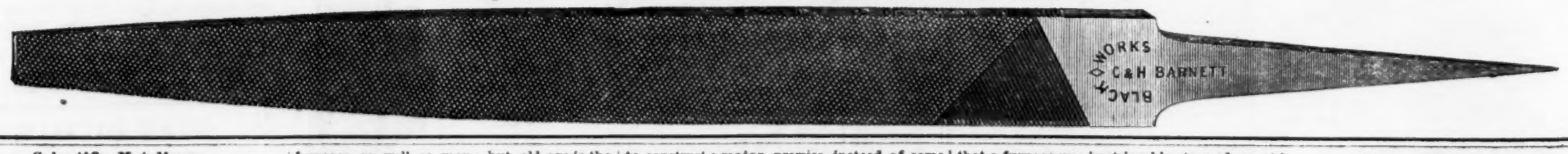

Scientific Metallurgy.

In a paper lately read by Dr. G. F. Becker, of the College of Mines, University of California, we find the following:

It thus needs but a definition to show that the metallurgist ought to be acquainted with the laws of chemical science; but this by no means completes the sum of his requirements. He must be an acute and practiced observer, and a quick and, to a certain extent, original thinker. It is necessary, but not sufficient, that he should be able to recognize the occurrence of certain sets of regular and normal phenomena; that he should know when his slag is right and his metal good; he must be able, so far as study and the cultivation of his acuteness make it possible, to perceive the nature of, and apply the proper remedy to any of the infinite number of abnormal events, from none of which he is safe, and many of which will certainly occur in his professional experience. If the ordinary analytical chemist finds that some unknown cause has disturbed the reactions he intended to produce, he begins his work afresh with the loss of a little time, and studies out the causes of the disturbance, if he has curiosity enough, when he is at leisure. But the metallurgist is in quite a different position; he must go on and get the better of whatever is interfering with his work. Perhaps it is an iron blast furnace that is in trouble; the iron will not run freely; the slag is thick and black; the little spy hole at the outside end of the blast nozzle, instead of being insufferably bright, shows a dull, irregular patch of light or even none at all. The furnace is chilling! What is the trouble? Has the sampling of the ore, or the analysis, or the calculation for the mixture been ill done, or have the men not followed their directions in mixing the material? Has water got into the furnace, or have accretions on the walls disturbed the descent of the ore and fuel? Which of a hundred malificent causes are at work? Four thousand pounds or more, and perhaps a reputation, are at stake. The metallurgist is in a more trying predicament than a doctor with a distinguished patient; for, in the worst event, a sympathetically mournful face and references to an inscrutable Providence are of no avail whatever to reconcile afflicted blast furnace owners. A last hour strikes for blast furnaces as well as men; but old age is the only disease of which they have a right to die. The cause of the trouble must be found, and a remedy borrowed or invented and applied. Holes may have to be pierced several yards above the hearth, and nozzles for blast introduced there to aid in sustaining the combustion, or doses of hundreds of pounds of chemicals blown into the furnace with the air, or any course adopted which the acumen of the metallurgist perceives to be a corrective of the disturbing cause. In one way or another a cure must be effected.

Such an instance as I have supposed is sufficient to make it plain that acute observation and ready research are essential in metallurgical art, and these qualities, existing in men as gifts in different degrees, must, in all cases, be developed by practice. Observation is the strong side of so-called practical men, and it unquestionably exists in the highest degree among those whose sole education has consisted in experience. Such men are also frequently very fertile in resource, but the effectiveness of the combination of observation and resource depends strictly upon the breadth and depth of the theoretical knowledge through which alone the former can be brought to bear upon the latter. We can do nothing whatever without a theory. There must be a major, as well as a minor, premiss. When a crow avoids the neighborhood of a gun he must reason. "Here is a gun; all guns are dangerous; therefore, there is danger here," and the proposition, all guns are dangerous, is purely theoretical. In the same way a smelter must act on theory, whether he has obtained it from others or deducted it solely from his own experience; but the theory a man derives from his own experience alone is apt to be faulty, and is necessarily meagre. It is, among other things, in having the experience of thousands at his command that the educated man has the advantage.

It is found that workmen who constantly handle a single class of ores attain an astonishing power of estimating by the eye the quantity of metal any given heap contains; but they are occasionally grossly at fault, and, with a strange ore, this power entirely fails them. The observation of the assayer is less sharp; he sees simply that it is an ore, perhaps a rich or a poor one, but his effective resource is vastly greater, for he has the whole of chemistry out of which to construct a major premiss, instead of some rule as to a shade of color, or the like, on which the workman relies, and, consequently, he arrives at an exact knowledge of the value of the mineral. There are cases, therefore, when the educated metallurgist really does not need the power of observation, which would be indispensable to one who should be required to make his conclusions without the aid of science. There are other cases where no amount of experience will preserve an uneducated man (unassisted) from the most disastrous blunders in the treatment of ores.

A few years ago a magnificent looking vein of magnetic iron ore was discovered in Western New York. A company was formed and a sample of the ore was sent to a well known metallurgist. Nothing could look better, but on analysis he found that it contained sulphur in microscopic particles to the amount of no less than 7 per cent., whereas 2 per cent. would have been enough to ruin it for smelting purposes. He informed the company that no saleable product could be obtained from the ore; but they had already begun building, and were not to be deterred by the judgment of a mere theorist, as they considered him, when the most experienced practical men, smelters, doubtless of large and long experience, pronounced it a first-class ore. They built two furnaces, worth, perhaps, £60,000. Their product was rather a "matte" than iron. It was such brittle, wretched stuff that it would not even answer for window weights. The company naturally failed, but they were bought out by another association, which paid a similar price for the same experience, and when I last heard of the plant a third company had just purchased it with a view to the manufacture of steel! Here was a case where ordinary experience utterly failed; while, from a scientific point of view, the matter was of the utmost simplicity; and such instances occur constantly. Many years ago, before the compounding of mixtures on the basis of analysis was understood, the only method possible in mixing new ores and fluxes was to rely, in the first place, on the empirical judgment of men of experience, and, after the furnace was running, to alter a little here and a little there, until a good working mixture had been arrived at. Under this system, involving almost invariably great loss of time and material, it not infrequently happened that a furnace was irretrievably stopped up at every outset, and had to be nearly or quite pulled to pieces before a fresh start could be made. This is a mishap which could hardly occur to the dullest tyro fresh from the poorest mining school in existence.

The value of scientific knowledge in metallurgical operations is beginning to be appreciated. Twenty years ago blast furnace owners in America and in England very generally turned up their noses at the idea of having a chemist about their works, "to call things by long names, and pretend to know more about smelting iron than men who had made it before he was born," and very right they would have been, too, had their idea of the nature and occupation of a chemist been correct, but since then they have seen cause, in such cases as I have instanced, to modify their opinions, and to-day almost every such establishment in England, and in a very large proportion of those in America, have regularly appointed chemists, and even those who refuse to go so far, resort frequently to analysts for information. Day by day these men are leaving the laboratory for the manager's office, and this must continue to be the case to a greater and greater extent, for the chemists can learn the manager's business, while the managers can scarcely master that of the laboratory.

The Schuylkill Valley.—A correspondent sends us the following interesting gossip concerning the furnaces of the Schuylkill Valley: Hooven & Son's Norristown Furnace is reported out of blast. The Merion, at Conshohocken, and Montgomery, at Port Kennedy, are in satisfactory operation; so also is the Swede Furnace below Norristown. This is now being run by the P. and R. Coal and Iron Co. The Anvil Furnace at Pottstown is doing well after being in blast nearly eight years. It is to be blown out in May. Work is progressing at the Bechtelville Furnace, and some grading is being done by the Warwick Iron Co. preparatory to pushing their furnace ahead when fair weather comes. The Monocacy Furnace is in blast, and so are the Birdsboro, Furnaces. Messrs. Brookes, however, have not yet blown in their new stack on the opposite side of the river. At Reading both the Henry Clay Furnaces and one of Seyfert & McManus, and Keystone No. 2, are out of blast. The latter was blown out this week. Leesport Furnace is about blowing out, also.

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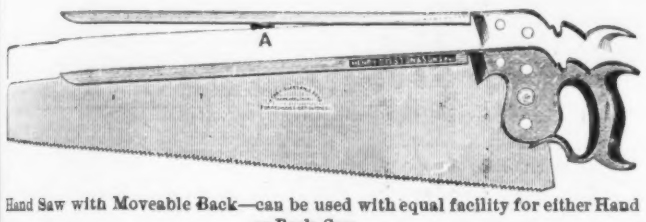
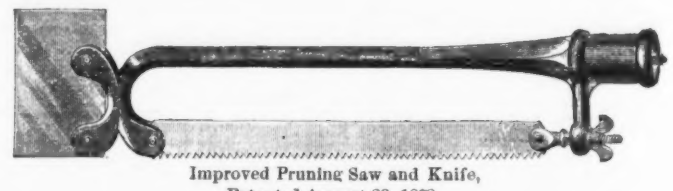
SAWS OF EVERY DESCRIPTION.

Also, FILES, TOOLS, Etc., and all kinds of Labor Saving Implements for keeping Saws in perfect order.



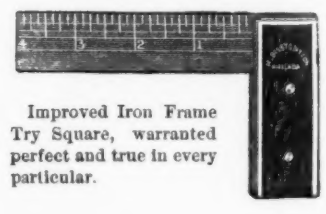
Hand Saw with Moveable Back—can be used with equal facility for either Hand or Back Saw.

Pork Packers' Saw.

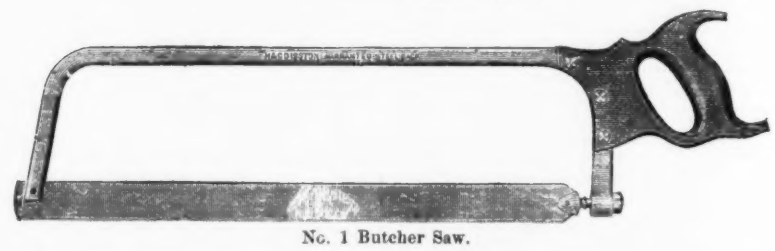


Improved Pruning Saw and Knife, Patented August 29, 1873.

Mitre Box Saw.

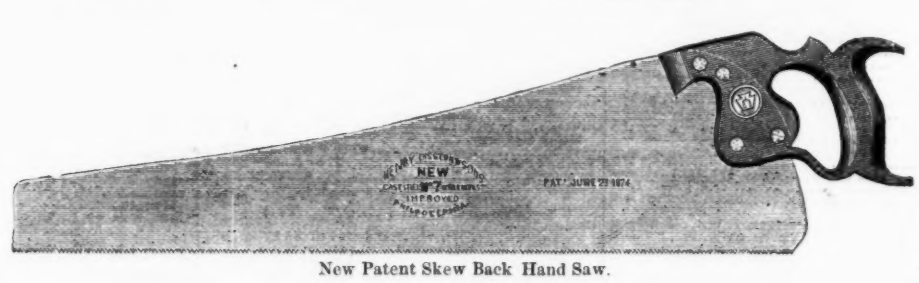


Improved Iron Frame Try Square, warranted perfect and true in every particular.

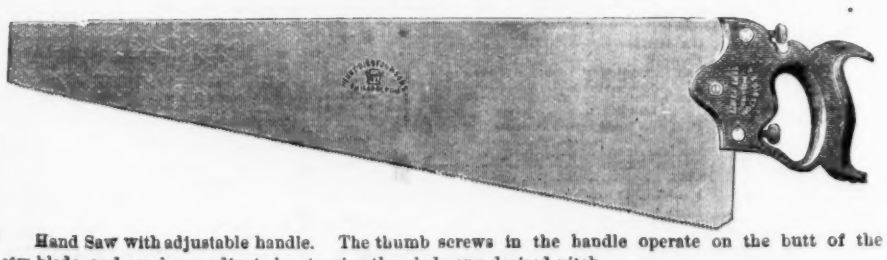


No. 1 Butcher Saw.

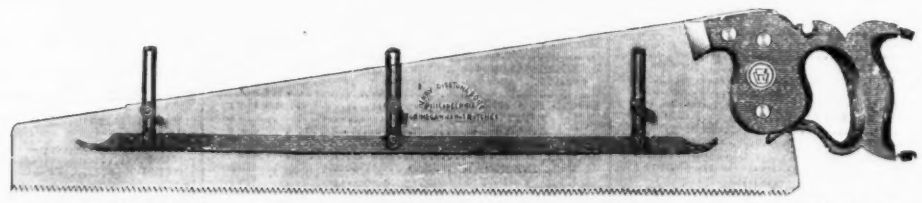
New Patent Skew Back Hand Saw.



New Patent Skew Back Hand Saw.

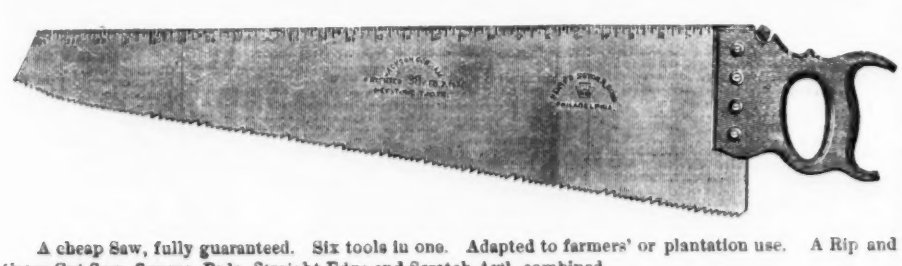


Hand Saw with adjustable handle. The thumb screws in the handle operate on the butt of the saw blade, and can be so adjusted as to give the blade any desired pitch.

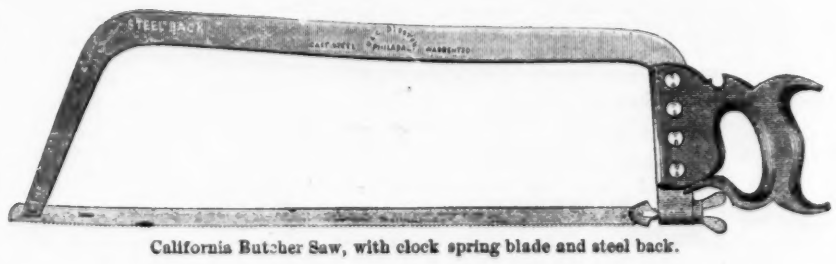


Patent Adjustable Gauge Saw for sawing tenons, kerfing, or any work where the cut is required to be of definite depth. Will pay for itself in one day. Try it and be convinced. Remove the gauge and use as an ordinary saw.

Game Cock Hand Saw—a perfect beauty.

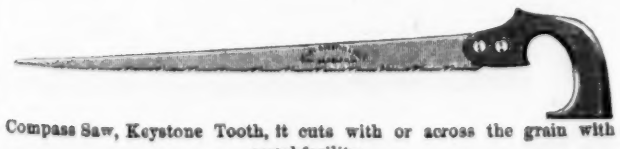


A cheap Saw, fully guaranteed. Six tools in one. Adapted to farmers' or plantation use. A Rip and Cross-Cut Saw, Square, Rule, Straight Edge and Scratch Awl combined.

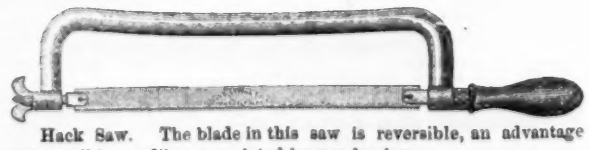


California Butcher Saw, with clock spring blade and steel back.

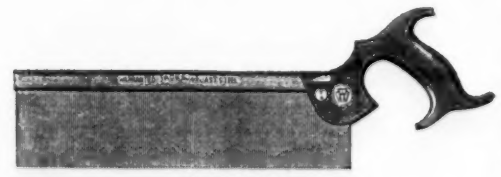
Table Saw.



Compass Saw, Keystone Tooth, it cuts with or across the grain with equal facility.



Hack Saw. The blade in this saw is reversible, an advantage which will be readily appreciated by mechanics.



Dove Tail Saw.

New York Wholesale Prices, February 18, 1875.

HARDWARE.

Anvils.
Solid Cast Steel.....₩ lb 14c
Wright's.....₩ lb gold 11¼c; over 250 lbs 12c, gold
Armitage's Mouse Hole.....gold 11c
Wilkinson's.....₩ lb gold 11c
Eagle Anvils.....₩ lb 8c

Apple Parers.
Domestic
Turn Table
Lightning
Hudson's
Reading
Union
Skeleton Paring, Coring and Slicing.....$7 @ 9 ₩ doz
Turn Table, old style.....$6·75 dis 10 %
Bay State, Paring, Coring and Slicing.....$15 00 dis 10 %
Climax Slicer.....8 00

Augers and Bits.
Douglass
Ives
Beecher (French, Swift & Co)
Griswold
Noble
Challenge
Snell Mfg. Co
Russell Jennings
Lewis' Single Twist Bits
Andrews' Bits
Cook's Bits
" Augers
Expansive Bits, Clark's
" Ives'
" Blake's
Hollow Augers, Douglass'
" Ives'
" French, Swift & Co.
" Bonney's Adjustable
" Stearns'
" Ives' Expansive
" Cushman's Expansive
Gimlet Bits—Screw, $7·70; no screw, $9
Double Cut Gimlet Bits, Shepardson's
" Hartwell's
" Douglass'
" Ives'
" Ladd's
Griswold's Patent
Morse's Bit Stock Drills
L'Hommedieu's Ship Augers
Watrous Ship Augers
Vaughan's Post Hole—
6 in. $23 60; 9 in. $25 per doz
1 quality.....dis 40&5 %
.....dis 40&10 %
.....dis 22½ @ 25 %
.....dis 10 %
.....dis 30 %
.....dis 25 %
.....dis 25&10 %
.....dis 25&10 %
.....dis 25&10 %
.....dis 25&10 %
.....$18 @ $36—dis 15 %
.....$30 @ $30—dis 30 %
.....$30—dis 25&10 %
.....dis 50 %
.....dis 25&10 %
.....dis 25&10 %
.....dis 20 %
.....dis 20&10 %
.....dis 20 %
.....dis 20 %
.....dis 15 %
.....dis 20 %
.....dis 15 %
.....dis 25 %

Awls and Tools.
Aiken's.....dis 25 %
Nos. 42 and 43.....dis 35&10 %
Clark's.....dis 30&10 %
Stanley's Excelsior.....$13 50—dis 20&10 %

Axes.
Brook's.....per doz $12 00 @ 14 00 net
Collins'.....per doz $12 00 @ 15 00
Hunt's.....₩ doz $12 50 @ 14 00
H. Clark's (J. C. W. & Co.) Bronzed.....₩ doz $10 00 net
Hurd's.....₩ doz 11 50 @ 12 50
Simmons'.....₩ doz 11 00 @ 11 50
Morris'.....₩ doz 12 50 @ 13 50
Red Jacket.....₩ doz 12 00 @ 12 50
Mann's.....₩ doz 11 50 @ 13 00
" Double Bitted.....₩ doz 21 50 @ 22 00
Underhill's.....₩ doz 12 00 @ 13 00
" Crown.....₩ doz 12 50 @ 13 50
John Leverett's.....₩ doz 14 50 @ 15 50
Fen Eyck.....₩ doz $11 00 @ 12 50 net
.....dis 40 %

Balances.
Bands.
Plated.....new list dis 50&5 %
Iron (dis.).....new list dis 25&5 %
Brass (Plated list).....new list dis 50, 10&5 %
Oroide.....new list dis 50&5 %

Belts.
Hand, Light Brass.....dis 65&5&10 %
Extra Heavy.....dis 40&10 %
White Metal.....dis 50&10 %
Silver Chime.....dis 15&10 %
Swiss.....dis 25 %
Globe.....dis 15&10 %
Gong, Abbe's.....dis 15&10 %
Yankee.....dis 30&10 %
Barton's.....dis 35½ %
Crank, Taylor's.....dis 25 %
Brook's.....dis 50 %
Cone's.....dis 10 %
Connel's.....dis 50&10&10 %
Lever, Sargent's.....dis 50&10&10 %
Taylor's.....dis 25 %
Hart, Bliven & Mead Mfg. Co.....dis 50&10 %
Pull, " " " " .....dis 50&10 %
Brook's.....dis 50 %
Western.....dis 25 %
Cow—Common Wrought.....dis 20&10 %
" Sargent's.....dis 50&10&10 %
Kentucky "Star".....dis 20&10 %
" " Sargent's.....dis 50&10&10 %
Dodge's Genuine Kentucky.....dis 35 %
Yaw's Genuine.....dis 30 %
Texas.....dis 35 %
Call.....dis 15 %

Bellows.
Blacksmiths'.....dis 20 %
Moulders'.....dis 15 %
Hand Bellows.....dis 10 %

Blind Adjusters.—Domestic.....₩ doz $3—dis 20 %

Blind Fasteners.
Mackrell's.....dis 30 %
Van Sand's, No. 4000, $14·00; No. 5705, $10 75.....net
Washburn's Patent.....₩ gross 14 00
Merriman's.....new list net

Blind Staples.
Boardman's Patent, ½ in. and larger.....₩ lb 37 c
" ⅜ in....." 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence
Tool Co.'s list.....dis 30 %
Burr's.....dis 10 %
Stanley Rule and Level Co.....dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c.....dis 60&10 %
Cast Iron Chain.....dis 60&10&10 %
Wrought Iron Barrel.....dis 50, 10&10 %
" " Square.....dis 50, 10&10 %
" " Shutter.....dis 60&10 %
Wrought Iron Flush, Stanley's.....dis 12&10 %
" " Sargeant's.....dis 50&10&10 %
Carriage and Tire, Common.....dis 75c·10&5 %
" " Norway Iron.....dis 50 x 10 %
Star, Philadelphia.....dis 50 @ 50&10 %
Eagle Philadelphia.....dis 50 @ 50&10 %
Carriage and Tire, R. B. & W.....old list dis 60 %
Plow, R. B. & W.....dis 30 %
Stove, R. B. & W.....dis 20 %
" Shelton Co. Shaved Heads.....dis 40 %
Union Nut Co., old list.....dis 60 %
" " Stove.....dis 15 %
" " Machine.....dis 45&10 %
Borax.....15c. ₩ lb

Boring Machines.
Kellogg's.....dis 15 %
Snell Mfg. Co., Rice's Patent.....dis 20 %
" " Regular.....dis 20 %
Douglas Mfg. Co.....dis 20&10 %
Mortising Machines each.....$18 00

Bow Pins.
Union Nut Co.....new list dis 50&10&5 %
Hotchkiss'.....dis 50 @ 55 %
Humason, Beckley & Co.'s.....dis 5 & 10&5 %
Sargent & Co.'s.....dis 50&10&10 %

Braces.
Barnes's Patent.....dis 40&5 %
Q. S. Backus.....dis 5&10 %
Wilson Mfg. Co.....dis 10 %
Spofford's Patent.....dis 50&10 %
Noble's Patent.....dis 40&5 %
Ives' Novelty.....dis 40&5 %
" Hamden.....dis 15&10 %
Common Bell.....dis 15&10 %

Bracers.—Shell.....dis 60&10 @ 65&10 %

Bright Wire Goods......dis 65&10&10 %

Butt Rings.—Union Nut Co., new list.....dis 50&10&5 %
Sargent's.....dis 60&10 %

Bung Hole Borers.
Common and Ring.....dis 25 %
Ives' Tap Borers.....dis 10&10 @ 25 %
Enterprise Mfg. Co.....dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co.....dis 20&10 %
Bradley's.....dis 25 %
Beatty's.....dis 20 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co.....dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$34·25	$38·75	$43·25	$48·50	$54·00

Butts.
Wrought Brass.....dis 30 %
Cast Brass.....dis 25 %
Cast Flat Joint, Narrow.....dis 40 @ 50 %
" " Broad.....dis 50&10 %
Cast Loose Joint, Narrow.....dis 55&10 %
" " Broad.....dis 60&10 %
" " Mayer.....dis 50 %
" " Parliament.....dis 50 %
Drilled Wire Jointed—
Fast Joint, Narrow, High List.....dis 55&10 %
" Broad.....dis 55&10 %
Loose Joint, Narrow and Broad.....dis 60&10 %
Loose Pin.....dis 55 @ 60 %
Wrought Fast Joint, Narrow.....dis 30&10 %
Wrought Broad.....dis 35&10 %
" Loose Joint.....dis 35&10 %
Wrought Table and Back Flaps.....dis 3 x 10 %
Lull & Porter's Blind Butts.....dis 40 %
Palmer Blind Butts.....dis 30&10 %
Nicholson Blind Butts.....dis 40&10 %
Parker's Blind Butts.....dis 55&10 %
Huffer's Blind Butts.....dis 33½&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5.....dis 5 &10 %
" " " No. 10 and 30.....dis 50 & 5 %
" " " No. 25.....dis 60&10 %
" Mortise " 2, 4, 4½, 6, 8, 10.....dis 40 %
Seymour's.....dis 55&10 %
Sheard's.....dis 5 & 5 %
Garretson's.....No. 1, dis 5&10 %; Nos. 2 and 7 dis 5&5 %
The American Spiral Spring Butt Co.....dis 5 %
Standard.....dis 5&5 %

Caps—Percussion, per 1000.
G. D.....37 @ 40c
Ely's E. B.....1-4s, 58c.; 1-10s, 65c., gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
" Colt's.....1-10s 84c gold

Carpet Sweepers.
Union.....each $2 75 net
Welcome.....each 2 75 net

Cartridges.—Metallic.....dis 50&10 %

Carts.—Horse and Curry.....dis 30&10 %
Cotton.....dis 10&10 %
Wood.....dis 15&10 %

Carpet Stretchers.
P. S. & W.....per doz $2 00; dis 40&5 %
Sargent's.....per doz $3 88—dis 50&10&10 %

Casters.
Bed.....dis 30&10 %
Plate and Shallow Socket.....dis 40&10 %
Deep Socket.....dis 33½ %

Cattle Leaders......new list dis 60&10 %

Chain
English Coil.....net

₩ lb	12	9¼	8¼	7¼	7	7¼c
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2.....by the cask, ₩ pair, gold 57c
Trace, 7-10-2.....by the cask, ₩ pair gold, 62c
German Halter Chain.....dis 25 %
German Coil.....dis 25 %
Galvanized Pump Chain.....₩ lb 13c
Jack Chain, Iron.....dis 50 %
" Brass.....dis 40 %

Chalk.
White.....₩ gross, 63c net
Red.....₩ gross, 90c net
Blue.....₩ gross, $1·17 net
White Crayons.....₩ gross, 16¼c net

Chisels.
Socket Framing, Douglass.....dis 60&10 %
" " Crossman.....dis 50&5&10 %
" " Hart Mfg. Co.....dis 60&10 %
" " Merrill.....dis 60&10 %
" Firmers, Douglass.....dis 50&10&10 %
" " Crossman.....dis 50&5&10 %
" " Hart Mfg. Co.....dis 60&5 %
" " Merrill.....dis 60 %
Socket Corner.....dis 50&10 %
Tanged Firmers.....dis 45&10 %
Butcher's.....$5·50 to £ gold
Newbould's.....$5·50 to £ gold
Spear & Jackson's.....$5·50 to £ gold

Clamps.
Cabinet.....dis 60&10 %
Judd's.....dis 45&10 %
Lambert's.....dis 20 %
Providence Tool Co.....dis 10 %

Clips, Axle.
Norway or Best.....dis 30 %
Superior.....dis 50 %
"Star," Superior Philadelphia.....dis 45&5 %

Coal Shovels.
Iron Handled.....₩ doz, $ 95 @ 1 25
Wooden Handled.....₩ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co.....dis 15 & 25 %

	14	15	16	17	18 inch.
Japanned	$8·00	6·25	6·75	7·50	8·00 per doz.
Galvanized	9·50	10·00	10·75	11·50	12·50 "

Morning Glory Funnel Hods—

	No. 15	16	17	
Japanned	9·00	10·50	12·00	per doz
Galvanized	13·00	14·50	16·00	"

Sidney Shepard & Co.'s new list.....dis 10 %
Cockeves....1¼ in., 34c.; 1¾ in., 38c.; 1¾ in., 43c. net
Cocks.
Brass Racking.....dis 25 %
Lock and Globe.....dis 25 %
Lever Bibbs.....dis 25 %

Coffee Mills.
Board and Box.....dis 15 %
Increase Wilson's.....dis 15 %
Selsor's Pat.....$9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.).....dis 20 %
French Steel.....dis 15 %
The Swift.....dis 25 %

Compasses and Dividers.
Bemis & Call Co.'s.....dis 35&10 %
Cook's.....dis 15 %
Excelsior.....dis 30 %
Peck Stow & Wilcox.....dis 25 %

Coopers' Tools.
Bradley's.....dis 15 @ 20 %
Chas. E. Little.....dis 30 @ 25 %
Swan & Brombacher.....dis 15 @ 20 %

Corkscrews......dis 25 %

Corn Knives and Cutters.
Bradley's.....dis 10 %

Crow Bars.
Cast Steel.....₩ lb 11c. net
Iron, steel points.....₩ lb 6c

Crucibles.—Gautier & Co.....₩ No. 5¼c

Curling Irons, &c.
⅜, ½, ⅝, ¾ in., $1·80, $2·00, $2·40.....
Curling Tongs.....₩ doz $6 50—dis 15 %
Pinching Irons.....₩ doz 7 50—dis 20 %

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass.....dis 20&10 %
Fitch's (List of No. 24), $1).....dis 20&10 %
Rubber.....₩ doz, $9·00—dis 15 %
Lawrence Curry Comb Co.....new list, Jan., 18.5, dis 25 %

Curtain Pins.—Silvered Glass.....old list dis 52½ %

Cutlery.

American Table	Meriden	New list Jan. '75, dis 25 %
American Pocket	Cutlery Co	
Am. Pocket—Humason & Beckley Mfg. Co.		dis 20&10 %

Dippers.
Britannia.....per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain.....per doz $3·25—dis 20 %
" Rimmed.....per doz 3·75—dis 20 %

Dog Collars.
Embossed Gilt.....dis 20 %
Leather.....dis 20 %
Brass.....dis 25 %

Door Springs.
Gray's.....$7·50 ₩ doz—dis 50&10 %
Torrey's Patent.....$7·50 ₩ doz—dis 55 %
Johnson's.....per doz $3 00 @ 4 00
Palmer's Japanned No. 6.....₩ doz $8·00
" Coppered " " 6·00 } dis 20 %
" Silvered " " 8·00

Challenge.—
Japanned.....₩ doz $4 00 @ 6 25—dis 40 %
Gem.—No. 1 large, Japanned.....per doz $4·00
No. 2 medium.....per doz 3·50 } dis 10 %
No. 3 small.....per doz 3·00
Barker's Concealed.....dis 12½ %

Drawing Knives.
Crossman's No. 1.....dis 50&5&10 %
Douglass.....dis 60&10 %
Hart Mfg. Co., No. 1.....dis 60 %
Merrill.....dis 60&10 %
Bradley's.....dis 25 %
Adjustable Handle.....dis 15 %

Drills.
Blacksmiths'.....each $2 60 net
Breast, P. S. & W.....dis 15&10 %
" Miller's Falls.....dis 25 %
" Aiken's.....$2·50; 4·00, dis 40 %
" Hotchkiss'.....dis 10 %
Ratchet, Merrill's.....dis 20 %
" Ingersoll's.....dis 25 %
" Whitney's.....dis 20 %
" Moore's Triple Action.....dis 20 %

Drill Chucks.—The Danbury.....each 10·00, dis 20 %
Beach Patent (Morse).....dis 15 %

Egg Beaters.
Monroe's.....8 in. 10 in.
Per doz $8·00 9·00 dis 10 %
Dover.....₩ doz net $6·00
National.....₩ doz $4·50—dis 20 %
Peerless.....₩ doz $4·00—dis 10 %

Emery.
Genuine Chester—Regular Nos.....₩ lb 7c } dis 10 %
" Flour and FF.....₩ lb 4c }
Washington Mills—Regular Nos.....₩ lb 8c
" Flour.....₩ lb 5c

Enameled and Tinned Ware.
Kettles.....dis 30 %
Sauce Pans.....dis 25 %
Glue Kettles.....dis 20 %
Tinned Saucepans.....dis 25 %

Escutcheons.
Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 60&10 %
Wood.....dis 25 %

Faucets.
Fenn's.....dis 50 %
" Cork Stops.....dis 40 %
Star.....dis 55&10 %
Frary's Patent Petroleum.....dis 15&10 %
Taylor's Patterns.....dis 20&10 %
Wood and Metallic.....dis 40 %
Wood, Cork Lined.....dis 60&10 %
Enterprise Mfg. Co., Self-Measuring.....dis 25 %

Felloe Plates......₩ lb 14c; dis 10 %

Files.
American File Co.....$5 00 to £ curreney—dis 10 %
Nicholson.....new list, Jan. 1, 1875, net
Hartford File Co.....$5 50 to £ currency—dis 10 %
" Western".....5 00 to £ net
Rothery's.....$5 to £ currency
J. & Riley Carr.....5 25 to £ gold
" " Horse Rasps.....5 50 to £ gold
Stubs'.....8 50 @ 9 00 to £ gold
Butcher's.....5 25 to £ gold
Walter Spencer & Co.'s "Diamond".....5 25 to £ gold
Spear & Jackson's.....5 00 to £ gold
Jowitt's.....5 25 to £ gold
Newbould's.....5 25 to £ gold
W. K. & C. Peace's "Imperial".....5 25 to £ gold
R. Ibbotson.....5 00 to £ gold
Fisher's.....4 75 to £ gold
GoodLad's.....4 00 to £ gold
Moss & Gamble.....5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.).....5 00 to £ gold
" " Horse Rasps.....5 25 to £ gold
"Philo Sheffield," P. T. Co.....5 00 to £ gold
Limet & Co. (French).....4 50 @ 5 00 to £ gold

Fluting Machines.
Mrs. Coles.....5 in., $6·00; 7 in., $7·00
" " Pony, 4 in., $4·75; 5 in., $5 6 in., 5·50; 7 in., $6
Knox, with 4-inch Rolls.....5 75 each
" " 6 " " .....7 00 each } dis 20 %
" " 8 " " .....9 00 each
O. K.....6 50 each net
Peerless, 4-inch Rolls.....4 00 each net
" 5 " .....4 75 each net
Excelsior, No. 1.....4 75 each net
" No. 2.....6 50 each net
Diamond.....7 50 each net
Climax 7-inch Rolls.....8 00 each net
" 4½ .....6 50 each net
Empire.....4 00 each net
Eureka, No. 1, 7-inch Roll.....8 00 each net
" No. 2, 5-inch Roll.....6 00 each net
K. F. M., 4½-inch Roll.....5 50 each dis 15 %
" 6-inch Roll.....6 00 each dis 15 %
Myers' Fashion Fluter, 4½ inch Rolls.....3 00 each net
" Convex Brass Fluter, Sad Iron attachment.....$1·75
Domestic Fluter.....$1·75 each net
Fairy, Self-Heater.....00 each net
Genova Hand Fluter.....$15 00 per doz net
Champion, 6 inch rolls.....$6 00 each dis 10 %
" 4 inch rolls.....$4 00 each dis 10 %

Fluting Scissors......dis 25&10 %

Forges.
"Empire" (W. P. Kellogg & Co.).....dis 30 %

Forks.
Hay, Manure & Spading.....dis 30 %
Plated A 1.....dis 50 %

Fry Pans.
Burnished, P. S. & W., new list.....dis 45 %
₩ doz.....$3·00 3·75 4·25 4·75 5·25 6·00 7·00 8·00 9·00

No.	0	1	2	3	4	5	6	7	8
₩ doz	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00	
No.	1	2	3		5	6	7	8	

Smith, Burns & Co., "Excelsior" Polished.....dis 35 %

Gas Stoves.
Tiffs & Howard.....dis 20 %

Gauges.
Marking.....dis 4&10 %
Wire.....dis 10 %

Gimlets.
Nail and Spike.....dis 25&10 %
Double Cut, Shepardson's.....dis 20 %
" " Ives'.....dis 25 %
" " Douglass'.....dis 20&10 %

Grind Stones.—J. F. Green & Bro.....dis 20 %

Grind Stone Fixtures
Sargent's Patent.....dis 65&10 %
Reading Hardware Co.....dis 66⅔&7½ %
Hart Mfg. Co.'s.....dis 60&5&10 %

Hammers.
Emmet Hammer Co.'s Handled.....dis 25 %
" " Sledge & Stone..₩ lb 25 @ 30c net
Humason & Beckley Mfg. Co.....dis 16⅔&10 %
Maydole's, new list.....dis 5 %
Cheney's.....new list net
Verree.....dis 5 %
Yerke & Plumb.....dis 12½ %
Magnetic Tack.....dis 2 & 10 %
Warner's.....list net

Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair.....
" Leg Irons $3 50 per pair.....
Providence Tool Co.'s Hand Cuffs $15 per doz } dis 10 %
" " Leg Irons 25 " }

Handles.
Wrought Chest.....dis 60&10 %
Surface Chest.....dis 65&10&10 %
Flush Chest.....dis 60&10&10 %
Lifting.....dis 60&10 %
Coffin.....dis 50&10 @ 60&10 %
Saw and Plane.....dis 20&10 %
Hammer and Hatchet.....dis 10 %
Greensboro', Axe, Pick, Hammer, &c.....dis 10 %
North Carolina Handle Co.....dis 10 %
Woolworth Axe, Pick and Sledge.....dis 10 %
Brad Awl.....per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td.....5 25—dis 2 &10 %
" " " large " .....6 50—dis 20&10 %
Apple " " ass'td .....6 00—dis 20&10 %
" " " large " .....7 50—dis 20&10 %
Socket " " ass'td .....9 50—dis 20&10 %
" Framing " " .....7 00—dis 20&10 %
File.....4 00—dis 20&10 %
Auger.....6 50—dis 20&10 %
" large .....8 00—dis 20&10 %
Patent Auger, Ives'.....dis 25&10 %
" " Douglass'.....per set $1 25—dis 10 %
" " Swan's.....per set $1 00—dis 10&10 %

Hangers.
Barn Door.....dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.).....dis 30 %
Novelty.....dis 30 %

Harness Snaps.
Henshaw's.....dis 25&10 %
Judd's.....dis 40 %
Fitch's (Bristol).....dis 30 %
Hotchkiss'.....dis 10 %
Andrews'.....dis 25 %
Sargent's.....dis 50&10 %

New York Wire......dis 10 %

Hatchets.—Isaiah Blood.....

Shingling, Nos.	1 2 3	₩ doz	$7 50	8 00 8 50
Claw, "	1 2 3	₩ doz	8 50	9 00 9 50
Lathing, "	1 2 3	₩ doz	7 50	8 00 8 50

Hunt's.....dis 10 %

Shingling, Nos.	1 2 3	₩ doz	$7 25	8 00 8 75
Claw, "	1 2 3	₩ doz	7 75	8 50 9 25
Lathing, "	1 2 3	₩ doz	7 50	8 25 9 00

Hurd's.....dis 25 %

Shingling, Nos.	1 2 3	₩ doz	$8 00	8 50 9 00
Claw, "	1 2 3	₩ doz	9 00	9 50 10 00
Lathing, "	1 2 3	₩ doz	8 00	8 50 9 00

Newark's Edge Tool Co.'s.....dis 25 %

Shingling, Nos.	1 2 3	₩ doz	$6 50	7 00 7 50
Claw, "	1 2 3	₩ doz	7 25	7 75 8 25
Lathing, "	1 2 3	₩ doz	6 50	7 00 7 50

Yerkes & Plumb.....dis 12½ %

Shingling, Nos.	1 2 3	₩ doz	$7 00	7 50 8 00
Claw, "	1 2 3	₩ doz	7 50	8 00 8 50
Lathing, "	1 2 3	₩ doz	7 00	7 50 8 00

Simmon's.....dis 15 %

Shingling, Nos.	0 1 2 3	₩ doz	$7 50	8 00 8 50 9 00
Claw, "	1 2 3	₩ doz	9 00	9 50 10 00
Lathing, "	1 2 3	₩ doz	8 00	8 50 9 00
Broad, "	1 2 3	₩ doz	9 00	10 00 12 00
" "	4 5 6	₩ doz	14 00	16 00 18 00
" "	7 8	₩ doz	20 00	22 00

Elephant.....dis 25 %

Shingling, Nos.	1 2 3	₩ doz	$8 00	8 50 9 00
Claw, "	1 2 3	₩ doz	9 00	9 50 10 00
Lathing, "	1 2 3	₩ doz	8 00	8 50 9 00

J. P. Verree & Co.....dis 5 %

Shingling, Nos.	1 2 3	₩ doz	$7 00	7 50 8 00
Claw, "	1 2 3	₩ doz	7 50	8 00 8 50
Lathing, "	1 2 3	₩ doz	7 00	7 50 8 00

Underhill's.....dis 10 %

Shingling, Nos.	1 2 3	₩ doz	7 25	8 00 8 75
Claw, "	1 2 3	₩ doz	7 75	8 50 9 25
Lathing, "	1 2 3	₩ doz	12 00	11 00 13 00

Hinges.
Gate, Western.....₩ doz $6·25—dis 60&10 %
" N. E.....₩ doz 11·25—dis 6 & 10&10 %
" N. Y. State.....₩ doz 7·20—dis 60&10 %
Rolled Plate.....dis 65&10 %
" Raised.....dis 55&10 %
Wrought Strap and T.....dis 35&10 @ 40&10 %
Providence Plate. { 6 and 8 in. 11c ₩ lb } dis 25 @ 30 %
{ over 8 in. 9½c ₩ lb }
Screw Hook and Strap..... { 8 in. 14 in. 7c } net
{ 14 to 36 in. 6c }
Heavy Welded Hook..... { 8 to 12 in., 6½c } net
{ 14 in & up, 6c }
Screw Hook and Eye..... { ⅜ to 1 in., 8½ } net
{ 1¼ in. 9½ }
{ 1½ in. 11½ }
Screw Hook and Eye, Sargent's—

	⅜	½	⅝ inch.
Per doz pairs	$4·75	7·25	10·25—dis 65&10&10 %

Hoes.
Solid Shank, C. S.....₩ doz $8 00—dis 30 %
Socket.....₩ doz 9 00—dis 30 %
Riveted Eye.....₩ doz 5 00—dis 30 %
Grub.....dis 25 %
Planters.....net @ 10 %
Scovill.....add 33⅓ %
Scovill Pattern.....net @ 5 %
Lane's C. E. Crescent, American Pattern.....add 5 %
" " Scovill Pattern.....add 15 %

Hooks.
Bird Cage.....dis 60&10 @ 70&10 %
Cotton.....dis 50 %
Belt.....dis 5&10 %
Bench—Skinner's.....per doz $8 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ₩ doz.....dis 10 %
Bench—Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" —McGill's.....$8 00 per doz, dis 10 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling. { Hart's list.....dis 60&10&10 % / Sargent's list.....dis 6 &5&10 % / Reading list.....dis 33⅓&10 %
Wrought Staples and Hooks and Staples.....dis 70&10 %
Wire Screw Hooks and Eyes.....dis 65&10&10 %
Grass.....dis 2 %
Whiffletree—Patent.....dis 30 %
Hooks and Eyes—Malleable Iron.....dis 60&10&10 %
" Brass.....dis 60&10&10 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable Horse Nail Co.

No.	5	6	7	8	9	10
Ausable	30c	27c	25c	24c	23c	22c
Polished and Polished.	31c	28c	26c	25c	24c	23c
Pointed and Blued.	32c	29c	27c	26c	25c	24c

In lots of 1000 lbs., 5% discount.
Brundage.

No.	5	6	7	8	9	10
	32c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	9	10
	24c	20c	30c	20c	30c	20c

In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9
	31c	28c	26c	25c	24c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).

No.	5	6	7	8	9	10
Patent Finish	23	25	23	22	21	20
Extra "	30	27	25	24	23	22

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
1000 lbs 1½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
U B	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis 5 %.
Star Brand.....₩ lb 16c
Morgan.....14c

Horse Shoes.
Burden.....₩ keg, $5 85
R. I. Horse Shoe Co., Perkins Pattern.....₩ keg, 5 85
" " R. I. Pattern.....₩ keg, 6 35
Mule Shoes.....₩ keg, 6 35

Kettles.
Brass.....₩ lb 45c net
Enameled.....dis 30 %

Knives.
Ames' Butcher Knives.....dis 20 %
" Shoe " .....dis 15 %
" Bread " .....₩ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's".....dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives.....dis 25 %

Knobs.
Carriage.....dis 60&10 %
Base—Common.....net
" Plush Tip.....dis 10 %
" Elastic End, No. 8.....dis 30&10 %
Door, Mineral.....₩ doz $2·25
" Por. Jap'd.....₩ doz 3·00 } dis 45&5&2 %
" " Plated.....₩ doz 7·00
" " Por.....₩ doz 7·50

Ladles.
Melting, Hart's.....dis 55&10 %
" Sargent's.....dis 5 &10 %
" Reading.....dis 15&10 %

Lanterns.
Tubular.....No. 0, $12 50—dis 15 %
Peerless.....No. 3, per doz $11·75—dis 10&10 %
Brady's Patent.....dis 10 & 10 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives.....dis 25 %
Etna.....dis 10 & 10 %
Yankee.....dis 10 & 10 %
De Beque.....dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch.....each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined.....per doz $6 30, dis 10 %

Lines.
Linen Fish.....dis 10&10 %
Cotton Chalk.....dis 40 %
Silver Lake Chalk.....dis 10&10 %
Mason's.....dis 10&10 %
Galvanized Wire Clothes.....$1 per 100 ft. dis 33⅓ %

Locks and Latches.
Cabinet—Gaylord.....dis 25 %
" Eagle.....dis 22 %
Trunk.....new list dis 25 %
Langstroth & Crane, Round Key.....dis 40 %
" " Flat Key.....dis 33⅓ %
Barnes & Deitz.....dis 25 %
Continental.....dis 15 %
Sheparson's.....dis 20 %
American Lock Co.....dis 33⅓ %
Plate.....dis 25 %
Yale Lock Co.....dis 40 %
Sargent & Greenleaf.....dis 20 %
Trenton
Branford
Norwich
Russell & Erwin.....Rev'd list of Jan. '75
Nashua.....dis 45&5 %
Mallory, Wheeler & Co.....2 % extra for cash.
P. & F. Corbin.
Parker & Whipple.
Jacobus & Nimick Mfg. Co.
Padlocks, Russell & Erwin } List of Jan., '75.
" Mallory, Wheeler & Co. } dis 50&5&2
" Wm. Wilcox & Co. }
" Romer's.....dis 5 %
" Vulcan Hardware Co.....dis 20 %
" New York Lock Co.....dis 20 %
" J. H. McWilliams.....dis 5 %
" Scandinavian Jail.....dis 10 %
" Barnes & Deitz.....dis 25 %
" D. K. Miller Lock Co.....dis 30 %

Mallets.
Hickory and Lignumvitæ.....dis 20 %

Meat Cutters.
Dixon's (P. S. & W.).....dis 10 %

No.	1	2	3	4
₩ doz.	$14 00	$17 00	$19 00	$30 00

Hales'.....dis 25 %

No.	11	12	13
₩ doz.	$27 00	$33 00	$42 00

Miles Challenge.....dis 20 %

No.	1	2	3
₩ doz.	$32·00	$30·00	$40 00

Perry's Champion (P. S. & W.).....dis 10 %

No.	200	300	400
₩ doz.	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.).....dis 10 %

No.	100	150
₩ doz.	$15 00	$18 00

American.....dis 25 @ 25&5 %

| No. | 1 | 2 | 2½ | 3 | 4

Tapes, Measuring.
American Flask and Cap Co.....dis 20 %
Eddy's.....dis 20 %

Tea Trays.
American Tea Tray Co.....dis 15 %

Thermometers.
Tin Case.....dis 50&10 %

Toe Calks.
.....₩ ℔ 13c net

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 20 %
Morse's.....₩ doz $12·00—dis 10&10 %
Wood Bottom.....per doz $12—dis 25&10 %
All Iron.....per doz $19·50—dis 25&10 %

Tinners' Tools and Machines.
P. S. & W.....list net

Traps.
Newhouse.....dis 20 %
Peck, Stow & Wilcox.....dis 30 %
Blake's Patent.....new list dis 25 %
Mouse, Wood Choker.....₩ doz holes, 15 @ 16c
" Patent Cnocker Union Nut Co.).....₩ doz holes 16 @ 18c net
" Round, Wire.....₩ doz $1 50 to 2 00 net
" Square, " .....₩ doz 2 00 to 2 50 net
" Cage, " .....₩ doz 2 50, dis 10 %

Trowels.
Lothrop's Brick and Plastering.....dis 10 %
Disston's Plastering.....dis 12½ %
Disston's Brick.....dis 12½ %
Rose's Brick.....dis 5 %
Brades' Brick.....gold, dis 10 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 25 %

Triers.
Butter and Cheese.....dis 25 %

Ventilators (Window).
Nickel and Gilt.....per dozen $16·00 @ 18·00

Vises.
Trenton Vises, Solid Box.
30 to 160 lbs.....16c
160 and over.....15c
Peter Wright's.....₩ ℔ 15½c. gold
Wilson's Solid Box.....dis 15 %
30 to 160 lbs.....18c
160 and upward.....22c
Wilson's Parallel.....dis 20 %
Sargent's " .....dis 50&10&10 %
Backus & Union, Parallel.....dis 25 %
Buffalo, Parallel.....new list dis 25 %
Fisher & Norris' Double Screw Parallel.....dis 15&10 %
Trenton Parallel.....dis 15 %
Merrill's Parallel.....dis 15 %
Parker's.....dis 20 %
Stephens' Parallel.....dis 15 @ 20 %
Bonney's Saw Filers.....per doz $30—dis 25 %
Steam's Saw Filers.....per doz $20—dis 25 %

Wheel Barrows.
Canal (Pugsley & Chapman).....new list dis 10 %
Coal, Garden and Stone (Pugsley & Chapman).....dis 25

Well Wheels.
Revised list.....dis 60&10 %

Wire.
Brass and Copper.....dis 10 %
Bright and Annealed.....Nos. 0 @ 18 dis 35 @ 47½ %
" " " .....19 @ 26 dis 55 @ 57½ %
" " " .....27 @ 36 dis 60 @ 62½ %
Coppered.....0 @ 18 dis 40 @ 42½ %
Galvanized, Nos. 0 to 6.....₩ ℔ 8½ @ 9c net
Galvanized, Nos. 7 to 18.....market list dis 10 @ 15 %
Tinned.....dis 25 @ 30 %
Cast Steel.....dis 15 @ 20 %
Tinned Broom Wire.....dis 30 @ 35 %
Galvanized Telegraph, Nos. 8 and 9.....₩ ℔ 9c @ 9½c
Galvanized Telegraph, Nos. 10 and 11.....₩ ℔ 10c @ 10½c
" " 12 " .....₩ ℔ 10½c @ 11c
Annealed Fence, Nos. 8 and 9.....dis 45 @ 50 %
" Grape, " 10 to 14.....dis 45 @ 50 %
Fence Staples.....₩ ℔ 7½ @ 8 %
Scale Steel Wire.....$7 00 to £ gold
Judd's Picture Wire.....dis 50

Wrenches.
American Adjustable.....dis 45 %
Baxter's Adjustable "S".....dis 30 %
" Diagonal.....dis 30 %
Collins & Co.'s .....dis 45 %
Coes' Genuine.....dis 40&5 %
" Pattern (Wrought).....dis 50&10 %
" " (Malleable).....dis 60&10 %
Lindsay's Patent.....dis 25 %
Taft's Pattern.....dis 70 %
Davis' atent Duplex.....new list dis 25 %
Bemis & Call's Patent Combination.....dis 20&5 %
" " Merrick's Pattern.....dis 2½&2½ %
" " Brigg's Patent.....dis 15&10 %
Aiken's Pocket.....per doz $10·00—dis 4&10 %

Wringers.
Providence.....₩ doz $64 00
Reliance.....₩ doz 61 00
Universal—Extra.....₩ doz 64 00
Novelty.....₩ doz 64 00
Sherman.....₩ doz 64 00
Eureka (Friction).....₩ doz 60 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 5 %.
COMMON STAMPED WARE, &C.

Bucket Covers.

	½	1	2	3	4
Quarts					
Inch	4½	5 3-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts	6	8	10	12	
Inch	8¾	9¼	9¾	10 9-16	
Per gross	$6·50	6·00	8·50	11·50	

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11¾	12¾	13¾
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾	10¾
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11¾	11¾	12¾	12¾	13¾
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	4·50	5·50	5·50	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·50	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5 qts.
Inch	3	3¾	3¾	4¾	5
Per gross	$1·15	1·40	1·60	2·00	2·75 3·00
Rimmed	2¾	3	3¾	4	4¾ inches.
Per gross	$2·25	2·50	3·00	3·50	4·00

T. K. Breasts only.

Inch	7¾	8	8¾	9	9¾	10	10¾	11 11¾
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00 13·00

Grater Plates.

Sheet	¾	1
Per gross	$3·00	6·00 11·50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes	per gross, $8·00	11·50
With Tubes	" 10·50	14·00

Stamped Square Pans.

No.	½	1
Per gross	$7·50	14·50

Common Square Pans (One Sheet).

Per gross	$11·50

Milk Skimmers (Plain or Pierced).

Per gross	$4·00

Lettered Plates.

Inch	5½	6
Per gross	$3·25	4·00

Steamer Bottoms.
Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5¾	6	7
Plain	per gro. $4·00	4·50	5·00	5·50	6·00	7·00
Jap'd or Burn'd	" 6·00	6·50	7·00	8·00	9·50	10·00

Coffee Boiler Lips.

	Small.	Large.
To Rivet	per gross, $0·80	1·10
To Solder	" 1·25	

DEEP STAMPED AND RETINNNED WARE, dis 25 %

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	quarts.	2½ quarts.
Per doz	$0·90	1·15	1·50	1·85	2·50

Retinned Milk Pans.

₩ ℔ 4,	1·30	1·50	1·75	2·00	2·25	3·15	3·50	3·85	4·75 5·25 5·75

Dipper Bowls, Plain Stamped—

Pints	½	1	Quarts	1	2	2½
Per doz.	·50	·75	Per doz	1·00	1·25	1·75

Dipper Bowls, Retinned—

Pints	½	¾	1	Quarts	1	2 2½
Per doz.	·75	·85	1·05	Per doz	1·40	1·75 2·25

Pans.
Dish Pans, Retinned Deep—

Quarts	7	8	10	14	17	21	30
Per doz	8·50	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE, dis 5 %.

Canisters, Common	Pound	½	1	3	3
	Per gross	$10·50	15·00	24·00	30·00
Canisters, Ringed	Pound	1	1½	2	3 4
	Per gross	$19·00	25·00	32·00	37·00 42·00
Canisters, Square	Pound	2	4	6	8 12 16
	Per doz	$3·00	4·25	5·00	5·75 8·00 9·00

Candlesticks, Japanned.....No. 1 2
Per gross $8·00 7·00

Cake Boxes, Round.....per nest, $7·25
Square.....per nest, 9·25

Chamber Pails, Japanned

Qts.	2	3	4	5
Green, per doz.	$8·00	9·00	11·00	13·00
Oak	9·00	11·00	12·00	13·00

Dust Pans, Corrugated.....per gross, $22·00
Box Graters.....per gross, $8·75
Molasses Cups.....Pint ½ 1 2 4
Per gross $13·00 16·00 28·00 42·00
Lunch Boxes, per doz.....7 in $2·00; 8 in. $2 50
Pepper Boxes Japanned...₩ gross small, $8·00; large, $4·00
Toy Banks, House.....No. 1 2
Per gross $7·00 5·50
Toy Banks, Gothic.....No. 1, $6·00, No. 2, 4·00 per gross
Toy Cups, Straight.....No. 1 7 8
Per gross $3·75 3·25 2·75
Toy Cups, Flaring.....No. 1, $4·25; 2, $3·75 ₩ gross
Toy Pails, Covered.....No. 1, per gross $4·00
Toy Rattles.....per gross, $2·00
Trunks, Wire Handled.....per nest (5) $1·75
Spittoons, Tin.....per gross, $27

PLANISHED TIN WARE, dis 25 @ 30 %.

Planished Coffee Pots, Round.

Each	70	75	85	1·15	1·25	1·30	1·40
Plain	1	2	3	4	5	6	7 8

Planished Tea Pots, Round.

Each	70	80	90	1·05	1·15	1·25
Plain	1	2	3	4	5	6

Planished Tea Pots, Oval.

Each	70	80	90	1·05	1·15	1·40 1·75
Plain	1	2	3	4	5	6 8

Planished Pepper Boxes, No. 1.....per doz., $1·53
Planished Flour Dredges, No. 3, $2·10; 4, 2·45 ₩ dozen.
Planished Round Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·00	1·10	1·20	1·40	1·60	2·00

Planished Oval Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·15	1·25	1·40	1·60	1·80	2·25

Planished Oval Chafing Dishes, Imperial Covers.

Inch	10	12	14	16	18	20	24
Each	$3·85	5·00	6·25	7·60	9·00	11·50	15·00 16·50

Planished Oval Chafing Dishes, Low Covers.

Inch	10	12	14	16	18	20
Each	$3·25	4·35	5·20	6·20	7·80	9·25

Planished Low Dish Covers.

Inch	10	11	12	14	16	18	20
Each	·70	·80	1·00	1·25	1·50	2·00	2·75

Planished Imperial Dish Covers.

Inch	10	11	12	14	16	18	20	22 24
Each	$1·55	1·70	2·30	2·60	3·15	3·45	4·60	5·45 6·90

Planished Etnas, on Stands.

Pints	1½	2	3	4	5
Each	$0·90	1·00	1·20	1·50	1·75

Planished Liquor Mixers.....Nos. 0 1 2
Per doz $2·00 2·10 2·45

Planished Oval Melon Molds.

Nos.	2	3	4	5	6	7	8	9
Each	$·60	·65	·70	·80	·90	1·00	1·15	1·35

Planished Oval Tumbler Warmers.
To fit 1, 2, 3, and 4 O. G. Urns.....each, $2·50

Planished Oval O. G. Urns.

Nos.	0	1	2	3	4	5	6	7 8
Each	$4·90	5·45	6·30	7·00	7·75	9·25	11·25	12·50 15·00

Planished Round Urns.

Nos.	0	1	2	3	4	5	6	7
Each	$4·20	4·85	5·45	6·30	7·75	9·00	11·00	14·25

Planished Round Oyster Dishes, (Complete)..Nos. 1 2
Each $2·10 2·80

Planished Oyster Dish Plates.....Nos. 1 2
Each $0·25 0·30

Oyster Dish Covers.....Nos. 1 2
Each $0·30 0·35

Tea Pot Handles—P. S. & W.....dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches.....per gross, $11·50
No. 2, Medium, 5¾ " .....12·50
No. 3, Large, 6½ " .....13·50
No. 4, Ex. Large 7¼ in., for Wash Pitchers &c.....18·00
Solid Iron. Tin Tipped.
No. 10, Small, 4½ inches.....per gross, $9·00
No. 15, Medium, 5¾ " .....9·50
No. 20, Large, 6½ " .....10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped.....per gross, $13·50
Saucepan Handles, Of Best Malleable Iron.
P. S. & W.....dis 20 %
Japanned.
No. 1, 5½ inches long.....per gross, $9·50
No. 2, 6 " .....7·75
No. 3, 6¾ " .....4·00
No. 4, 7¾ " .....4·25
No. 5, 8 " .....4·50
No. 6, 9 " .....4·75
Tinned.
No. 1, 5½ inches long.....per gross, $4·25
No. 2, 6 " .....4·50
No. 3, 6¾ " .....4·75
No. 4, 7¾ " .....5·25
No. 5, 8 " .....5·50
No. 6, 9 " .....5·75
Japanned.....per lb., 16
Tinned....." ·20
Iron Kettle Ears (P., S. & W.).....dis 45 %
Half gross pairs in a package.
Tinned.

Nos.	1	2	3	4	5	6	7
Per gross pairs	$8c	$1·00	1·50	1·75	2·10	2·75	3·75

Black.

Nos.	1	2	3	4	5	6	7 8
Per gross pairs	75c	85c	$1·25	1·50	1·75	2·25	2·75 4·00

Tinned Tea Kettle Ears.

Nos.	1	2	3	4	5 6
Per gross pairs	$1·75	2·10	2·75		

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos.	1	2	3	4	5	6	7
Per gross pairs	1·00	1·25	1·50	1·75	2·00	2·50	3·00

Malleable Iron Kettle Ears for Coal Hods etc.
P., S. & W.....dis 20 %
No. 10 Small.....₩ ℔, Tinned 2½c; Black, 16c
No. 20 Medium.....₩ ℔, " 30c; " 16c
No. 30 Large.....₩ ℔, " 30c; " 16c
No. 40 Extra Large.....₩ ℔, " 30c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4¼ in..dis 25 %
Plain, 8c.; Japn'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned.....30c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.).....dis 35 %
Plain with drilled holes, per lb.....8c
Plain with Cast " 8c
Plumbers' Scrapers—(P. S. & W.).....dis 25 %
Extra quality, length 6 in., per doz.....$4·00

METALS.

IRON.—DUTY Bars, 1 to 1¼ cents per lb.. Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 2 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.

Foundry No. 1	₩ ton,	$27 00 @ 28 00
Foundry No. 2	"	25 00 @ 26 00
Gray Forge	"	23 00 @ 27 00
White and Mottled	"	

SCOTCH.

Coatness	"	37 00 @ 38 00
Glengarnock	"	36 00 @ 37 00
Eglinton	"	33 50 @ 34 00

Bar Iron.
Am. Renned, at mill.....nominal.....
Rails.
Welsh, gold.....₩ ton,
American, at works, currency.....48 00 @ 53 00
Old Rails.....27 00 @ 28 00
Scrap.
Wrought Scrap....." 34 00 @ 35 00

Bar Iron from Store.
Common Iron.
⅜ to 2 in. round and square.... } ₩ ton $60 00 @ 62 50
1 to 6 in. x ⅜ to 1 in..... }
Renned Iron.
⅜ to 2 in. round and square.... } " 62 50 @ 65 00
1 to 6 in. x ⅜ to 1 in..... }
1 to 6 in. x ¼ and 5-16..... " 67 50 @ 70 00
Shafting Iron—2¼ to 4 in..... " 75 00 @ 90 00
Rods—5-16 to ⅜ round and square.. " 67 50 @ 110 00
Bands..... " 80 00 @ 82 50
Hoops—⅜ to 2 in..... " 90 00 @ 135 00
Swedish Iron.
Ordinary sizes..... " 130 00 @ 132 50
Plow size..... " 145 00 @ 150 00

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20	₩ ℔ 4½	5½c	5¾c
21 to 24	" 4½ @ 4¾c	5¾c	5¾c
25 to 26	" 4¾c	5¾c	5¾c
27	" 5c	5¾c	6c
28	" 5¼c	5¾c	6¼c

Galvanized, 1 to 20, prime, ₩ ℔; 2d quality...₩ ℔ 8c
" 21 to 24 " " 10 " " 10c
" 25 to 26 " " 11 " " 10c
" 27 " " 12 " " 11c
" 28 " " 13 " " 12c
Patent Polished.....₩ 15c
Russia, Nos. 8 to 16....." 17½c
" Stained, No. 1....." 16½c
Belgian....." 10c
One piece Corrugated Sheet Iron Elbows.
CHARCOAL IRON

½	¾	¾	1	inch.
$3·50	3·50	4·50	6·25	6·50 per doz.

RUSSIA IRON.

4½	5	5¾	6	7 inch.
$5·00	7·00	9·00	12·00	14·00 per doz.

COPPER—DUTY: Pig, Bar and Ingot, 6c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.
American Ingot.....₩ ℔ 22 @ 22½c
English " "
SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot.....33c ₩ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot.....35c "
Braziers' Copper, 12 oz. per square foot and lighter.39c "
Circles less than 24 inch in diameter.....35c ₩ ℔
Circles, 24 inch diameter and over.....39c "
Segment and Pattern Sheets.....36c "
Locomotive Fire Box Sheets.....32c "
Sheathing Copper, over 12 oz. per sq. ft.....31c "
" 12 oz. ₩ sq. ft. and ughter.....39c "
Bolt Copper.....33c "
Copper Bottoms, 32 c. ₩ ℔.....net
No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier.....36c. By the case, c. ₩ ℔
12 oz. and lighter.....39c. " 38c "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier.....38c. By the case, 37c. ₩ ℔
(And all sizes not over 30 inches wide.)
30x60
14 and 16 oz. and heavier.....40c. ₩ ℔
12 oz.....43c. "
TINNING.
14x48, by the case.....8c. ₩ sheet
14x48, less than case.....10c. "
Boiler Sizes, 7 and 8 inch.....12c. "
" 9 inch.....15c. "
Other sizes not larger than 30x60.....3½c. ₩ sq.
Larger than 30x60.....5c. "
LEAD—DUTY Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2¼ cents per lb. All subject to a reduction of 10 per cent.
Spanish.....6¼ @ 7c gold
German Refined.....6¼ @ 6¾c gold
English.....6¾c. gold
American.....6¼ @ 6¾c gold
Bar.....dis 10 %.....4¾c.
Pipe.....dis 10 %.....5¾c.
Tin Lined Pipe.....dis 10 %.....10½c.
Sheet.....dis 10 %.....5¾c.
Shot.....dis 10 %, Drop, 9c. Buck, 9½c.
BABBIT METAL.
N. P. U.....₩ ℔ 8¼ @ 9c
A, 25c.; B, 30c.; C, 15c.; D, 12c., ₩ ℔.
SOLDER.....No. 1, 15c.; No. 2, 13¾ @ 14c
STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 3¼ cents; over 7 cents, and not above 11, 8 cents per lb. over 11, 8¼ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, whatever form or description shall be classed as

American Cast Steel.

Tool	15 @ 16c
Spring	10c
Homogeneous	14½c
Tire	12½ @ 13½c
Machinery (round and square)	10 @ 11c
File	11c
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
" circular as to size	18 @ 30c

Chrome Steel.

Tool	₩ ℔ 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₩ ℔ 12c and upward
Machinery	₩ ℔ 14c
Hammer	" 15c,
Gun or Homogeneous	" 16c

English Steel.—payable in gold, dis 5 % cash.

"	Best Cast	₩ ℔ 18c
"	Extra Cast	" 19c
"	Round Machinery, Cast	" 11¼c
"	Swaged, Cast	" 18c
"	Best Double Shear	" 18c
"	Blister, 1st quality	" 13½c
"	" 2d quality	" 11½c
"	" 3d quality	" 14c
File Steel, Flat and ½ Round		" 12½c
"	Square and Round	" 13c
"	Mill	" 13½c
"	Taper to 4 inch	" 17c
"	Taper 3 and 3¼ inch	" 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	6¾ @ 7c, gold
American "	6¾ @ 11c., currency

TIN—DUTY: Plates, Sheets, Dagger and Terne, 1½c. per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Bancs, subject to duty of 10 per cent.

Bancs	₩ ℔ 26c., gold
Straits	₩ ℔ 24½c., gold
English	₩ ℔ 22c., gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal		11·50 @ 11·75
12x12,	"	12·00
14x20,	"	12·25
I X 10x14,	"	13·75
12x12,	"	14·25
14x20,	"	14·75
D C 12½x17	"	11·00
D X 12½x17	"	13·25
For each additional X add		·25

COKE TIN PLATE.

	Best	2d Quality.	Ordinary.
I C 10x14	$10·25 @ 10·75	9·50 @ 10·00	9·25 @ 9·75
I C 12x12	10·50 @ 10·75	10·00	9·25 @ 9·50
I C 14x20	10·50 @ 11·00	10·50	9·25 @ 9·50

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$0·50	9·50 @ 10·00	8·25 @ 9·25
I X 14x20	12·75		
I C 20x28	21·00 @ 21·50	19·50 @ 2·00	16·50 @ 18·00
I X 20x28	26·00		
I C 20x30	24·00		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ ℔. All subject to a reduction of 10 per cent.

Sheet	cask 10½c
"	open 10¾c

Old Metals.

(Dealers' Selling Prices.)

Copper	@ 20
Yellow metal	14 @ 15
Brass	13 @ 14
Heavy Composition	12 @ 13
Old lead, solid	6 @ 6¼
Tea lead	5
Wrought Iron	1½ @ 1¾
Sheet Iron	0¾ @
Cast iron	1 @ 1¼
Machinery Iron	1¼ @
Zinc	5 @ 5¼
Pewter, No. 1	17
" No. 2	10 @ 12
Spelter	5½ @ 6

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ℔ 20c
" " Ordinary	8c
" Ivory Drop, fair	15c
" " best	26c
Black Paint, in oil.....kegs, 8c.; asst'd cans, 11 @	
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	83c
" Ultramarine	25 @ 30c
Brown, Spanish	1¼c
" Van Dyke	9c
Carmine, 40	$12 00
Green, Chrome	15 @ 22c
" in oil	18 @ 25c
" Paris	good, 30c; best, 40c
" " in oil	30c 45c
Mineral Paints	1¼ @ 4c
Orange Mineral	14½c
Red Lead, American	9¼c
" English	10½c
" Venetian (N. C.) dry	2¾c
" in oil	asst'd cans, 11c; kegs, 8¼c
" Indian, dry	10c
Rose Pink	18c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	16 @ 20c
" Raw	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	
" English	1 9 , gold
" Trieste	1 65 "
" American, Common	22c
White Lead, American, pure dry	10c
" " in oil	11c
White, Paris, English, prime	in bbls. 2½ @ 3c
Yellow Ochre, French	2½ @ 2¾c
" in oil	asst'd cans, 11c; kegs, 8½c
" Vermont	in casks 1½c
" Chrome	17 @ 21c
" in oil	18 @ 22c
Zinc White, American No. 1 dry	8c
" 1, in oil	11c
" French (Paris)	11 c
" in oil	12 c

Oils.

Linseed Raw	₩ gal. casks, 79c. 80c 90c
Boiled	" 81c. " 85c
Whale, Crude	
" Bleached Winter	
Sperm, Crude	" 1·60
" Winter unbleached	" 1·82
" " bleached	" 1·90
Seal, Extra Refined	
Lard, Pure Winter	" 1·18
" Spring	" 1·10
Cotton Seed, Crude	" 60c
" Southern Yellow	" 65c
" White	"
Neatsfoot, Winter	70c @ $1·10
Natural Lubricating	38c @ 40c

Sundries.

Asphaltum	9c
Benzine	₩ gal. 16c
Chalk	1½c
" Block	
Dryer, Patent, Am'n	asst'd cans, 10½c.; kegs 9c
" English	" 11c.; " 9c
Flocks	
Frostings	50c
Glue, White	33 @ 47c
" Sheet	30c
Glaziers' Points, Zinc	9c
Gum, Copal	36c
" Damar	25c
" Shellac, English	45c
" " dark	75c
Litharge	10c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	8c
Spirits Turpentine	38c
Whiting, Spanish	1c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	
6 x 8 to 10 x 15	$10·25	$9·25	$8·75	$8·00
11 x 14 to 16 x 24	12·00	11·00	10·00	9·50
18 x 22 to 20 x 30	15·00	13·50	12·00	10·50
15 x 36 to 24 x 30	17·50	15·25	12·50	
26 x 24 to 24 x 36	18·25	16·00	13·25	
26 x 36 to 26 x 44	20·00	18·00	14·50	
26 x 46 to 30 x 50	21·00	19·00	15·25	
30 x 52 to 30 x 54	22·50	20·25	16·25	
30 x 56 to 34 x 56	24·50	21·75	19·00	
34 x 58 to 34 x 60	26·00	24·50	21·50	
36 x 60 to 40 x 60	30·50	27·00	24·50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·50	$15·00	$14 00	$13·00
11 x 14 to 16 x 24	19·25	17·25	16 00	15·25
18 x 22 to 20 x 30	24·00	20·75	19·25	
15 x 36 to 24 x 30	24·00	24·50	20·00	
24 x 24 to 24 x 36	29·25	25·75	21·25	
26 x 36 to 26 x 44	32·00	29·00	23·25	
26 x 46 to 30 x 50	33·75	30·50	24·50	
30 x 52 to 30 x 54	36·00	32·50	26·00	
30 x 56 to 34 x 56	39·25	35·00	30·50	
34 x 58 to 34 x 60	41·75	38·25	34·25	
36 x 60 to 40 x 60	49·00	43·25	39·25	

Sizes above—$2·00 per box extra for every 5 inches
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 80 united inches, will be charged in the 84 united inches bracket
Discount 60 & 10 to 60 & 15 %.

Hardware.

PRATT & CO.,

**

New York Wholesale Prices, February 18, 1875.

HARDWARE.

Anvils.
Solid Cast Steel.....₱ lb 14c
Wright's.....₱ lb gold 11½c; over 250 lbs 12c, gold
Armitage's Mouse Hole.....gold 11c
Wilkinson's.....₱ lb gold 11c
Eagle Anvils.....₱ lb 8c

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union, Skeleton Paring, Coring and Slicing.....$7 @ 9 ₱ doz
Turn Table, old style.....$6·75 dis 10 %
Bay State, Paring, Coring and Slicing.....$15 00 dis 10 %
Climax Slicer.....8 00

Augers and Bits.
Douglass, Ives, Beecher (French, Swift & Co), Griswold, Noble.....1st quality.....dis 40&5 %
Challenge.....dis 40&10 %
Snell Mfg. Co.....dis 22½ @ 25 %
Russell Jennings.....dis 10 %
Lewis' Single Twist Bits.....dis 30 %
Andrews' Bits.....dis 25 %
Cook's Bits.....dis 10&10 %
" Augers.....dis 50 %
Expansive Bits, Clark's.....$18 @ $26—dis 15 %
" " Ives'.....$20 @ $30—dis 30 %
" " Blake's.....$25—dis 25&10&10 %
Hollow Augers, Douglass'.....dis 25&10 %
" " Ives'.....dis 25&10 %
" " French, Swift & Co.....dis 25&10 %
" " Bonney's Adjustable.....₱ doz $48—dis 25 %
" " Stearns' " .....₱ doz $48—dis 25 %
" " Ives' Expansive.....each $4·80—dis 40 %
" " Cushman's Expansive.....dis 20 %
Gimlet Bits—Screw, $7·50; no screw, $9.....dis 20&10 %
Double Cut Gimlet Bits, Shepardson's.....dis 20 %
" " Hartwell's.....dis 50 %
" " Douglass'.....dis 20&10 %
" " Ives'.....dis 25 %
" " Ladd's.....dis 50&10 %
Griswold's Patent.....dis 20 %
Morse's Bit Stock Drills.....dis 20 %
L'Hommedieu's Ship Augers.....dis 15 %
Watrous Ship Augers.....dis 15 %
Vaughan's Post Hole—
6 in. $23 60; 9 in. $25 per doz.....dis 20 %

Awls and Tools.
Aiken's.....dis 25 %
Nos. 44 and 44.....dis 35&10 %
Clark's.....dis 30&10 %
Stanley's Excelsior.....$13 50—dis 20&10 %

Axes.
Brook's.....per doz $13 00 @ 14 00 net
Blood's.....per doz $12 00 @ 13 00
Hunt's.....₱ doz $12 50 @ 14 00
Collins'.....₱ doz 11 00 @ 15 50 net @ dis 5 %
B. Clark's (J. C. W. & Co.) Bronzed.....₱ doz $10 00 net
Hurd's.....₱ doz 11 50 @ 12 50
Simmons'.....₱ doz 11 00 @ 11 50
Morris'.....₱ doz 12 50 @ 13 50
Red Jacket.....₱ doz 12 00 @ 12 50
Mann's.....₱ doz 11 50 @ 12 00
" Double Bitted.....₱ doz 21 50 @ 22 00
Underhill's.....₱ doz 12 00 @ 13 00
" Crown.....₱ doz 12 50 @ 13 50
John Leverett's.....₱ doz 12 50 @ 15 50
Ten Eyck.....₱ doz $11 00 @ 12 50 net

Balances.
Bands.
Plated.....new list dis 50&5 %
Iron Rim.....new list dis 25&5 %
Brass (Plated list).....new list dis 50, 10&5 %
Droide.....new list dis 50&5 %

Belts.
Hand, Light Brass.....dis 65&5&10 %
" Extra Heavy.....dis 40&10 %
" White Metal.....dis 50&10 %
" Silver Chime.....dis 15&10 %
" Swiss.....dis 25 %
" Globe.....dis 15&10 %
Gong, Abbe's.....dis 15&10 %
" Yankee.....dis 33&10 %
" Barton's.....dis 33½ %
Crank, Taylor's.....dis 25 %
" Crook's.....dis 50 %
" Cone's.....dis 10 %
" Connel's.....dis 50&10 %
Lever, Sargent's.....dis 50&10&10 %
" Taylor's.....dis 25 %
" Hart, Bliven & Mead Mfg. Co.....dis 50&10 %
Pull, " " " .....dis 50&10 %
" Brook's.....dis 50 %
" Western.....dis 25 %
Cow—Common Wrought.....dis 20&10 %
" Western.....dis 20&10 %
" Sargent's.....dis 50&10&10 %
Kentucky "Star".....dis 20&10 %
" " Sargent's.....dis 50&10&10 %
Dodge's Genuine Kentucky.....dis 25 %
Yaw's Genuine.....dis 30 %
Texas.....dis 35 %
Call.....dis 15 %

Bellows.
Blacksmiths'.....dis 20 %
Moulders'.....dis 15 %
Hand Bellows.....dis 10 %

Blind Adjusters.—Domestic.....₱ doz $3—dis 20 %

Blind Fasteners.
Mackrell's.....dis 30 %
Van Sand's, No. 000, $4·00; No. 5?05, $10 75.....net
Washburn's Patent.....₱ gross 14 00
Merriman's.....new list net

Blind Staples.
Boardman's Patent, ¼ in. and larger.....₱ lb 31 c
" ⅜ in....." 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list.....dis 30 %
Burr's.....dis 10 %
Stanley Rule and Level Co.....dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c.....dis 60&10 %
Cast Iron Chain.....dis 60&10&10 %
Wrought Iron Barrel.....dis 50, 10&10 %
" " Square.....dis 50, 10&10 %
" " Shutter.....dis 60&10 %
Wrought Iron Flush, Stanley's.....dis 10&10 %
" " Sargent's.....dis 50&10&10 %
Carriage and Tire, Common.....dis 25&10&5 %
" " Norway iron.....dis 50 x 10 %
Star, Philadelphia.....dis 50 @ 50&10 %
Eagle Philadelphia.....dis 50 @ 50&10 %
Carriage and Tire, R. B. & W.....old list dis 60 %
Plow, R. B. & W.....dis 30 %
Stove, R. B. & W.....dis 20 %
" Shelton Co. Shaved Heads.....dis 20 %
Union Nut Co., old list.....dis 60 %
" " Stove.....dis 15 %
" " Machine.....dis 45&10 %

Borax......10c. ₱ lb

Boring Machines.
Kellogg's.....dis 15 %
Snell Mfg. Co., Rice's Patent.....dis 20 %
" " Regular.....dis 20 %
Douglas Mfg. Co.....dis 20&10 %
Mortising Machines each.....$18 00

Bow Pins.
Union Nut Co.....new list dis 50&10&5 %
Hotchkiss'.....dis 50 @ 55 %
Humason, Beckley & Co.'s.....dis 50&10&5 %
Sargent & Co.'s.....dis 50&10&10 %

Braces.
Barber's Patent.....dis 40&5 %
Q. S. Backus.....dis 10&10 %
Wilson Mfg. Co.....dis 10 %
Spofford's Patent.....dis 50&10 %
Noble's Patent.....dis 40&5 %
Ives' Noveity.....dis 40&5 %
" Hamden.....dis 15&10 %
Common Ball.....dis 15&10 %

Brackets.—Shelf.....dis 60&10 @ 65&10 %

Bright Wire Goods......dis 65&10&10 %

Butt Hinges.—Union Nut Co., new list.....dis 50&10&5 %
Sargent's.....dis 60&10 %

Bung Hole Borers.
Common and Ring.....dis 25 %
Ives' Tap Borers.....dis 10&10 @ 25 %
Enterprise Mfg. Co.....dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co.....dis 20&10 %
Bradley's.....dis 25 %
Beatty's.....dis 20 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co.....dis 45&10 %

0	1	2	3	4	5	6
$23·25	$29·75	$34·25	$38·75	$43·25	$48·50	$54·00

Butts.
Wrought Brass.....dis 30 %
Cast Brass.....dis 20 %
Cast Fast Joint, Narrow.....dis 40 @ 50 %
" " Broad.....dis 50&10 %
Cast Loose Joint, Narrow.....dis 55&10 %
" " Broad.....dis 60&10 %
" " Mayer.....dis 50 %
" " Parliament.....dis 50 %
Drilled Wire Jointed—
Fast Joint, Narrow, High List.....dis 50&10 %
" Broad.....dis 50&10 %
Loose Joint, Narrow and Broad.....dis 60&10 %
Loose Pin.....dis 55 @ 60 %
Wrought Fast Joint, Narrow.....dis 35&10 %
Wrought Broad.....dis 35&10 %
" Loose Joint.....dis 35&10 %
Wrought Table and Back Flaps.....dis 3 &10 %
Lull & Porter's Blind Butts.....dis 10 %
Palmer Blind Butts.....dis 30&10 %
Nicholson Blind Butts.....dis 40&10 %
Farsser's Blind Butts.....dis 55&10 %
Huffer's Blind Butts.....dis 33½&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5.....dis 5 &10 %
" " " " No. 40 and 50.....dis 50&10 %
" " " " No. 20.....dis 60&10 %
" Mortise " " 2, 4, 4½, 6, 8, 10.....dis 40 %
Seymour's.....dis 55&10 %
Sheard's.....dis 5 &5 %
Garretson's.....No. 1, dis 9 &10 %; Nos. 2 and 7 dis 3 &5 %
The American Spiral Spring Butt Co.....dis 20 %
Standard.....dis 5 &5 %

Caps—Percussion, per 1000.

G. D	37 @ 40c
Ely's E. B	1-4s, 55c.; 1-10s, 65c., gold
" Double Waterproof	1-4s, $1·45; 1-10s, $1·32½c., gold
Colt's	1-10s 80c gold
Hart Mfg. Co	1-10s, 80c gold
Union Metallic	1-10s, 80c gold
Remington's	1-10s, 80c gold
Eley's	1-10s, 80c gold
Kynoch's	1-10s, 80c gold
Musket	1-10s, 80c gold
Rifle	1-10s, 80c gold
Pistol	1-10s, 80c gold
Central Fire	1-10s, 80c gold
Shot Gun	1-10s, 80c gold
Wads	1-10s, 80c gold

Carpet Sweepers.
Lion.....each $2 75 net
Welcome.....each 2 75 net

Cartridges.—Metallic.....dis 50&10 %

Cards.—Horse and Curry.....dis 30&10 %
Cotton.....dis 10&10 %
Wool.....dis 15&10 %

Carpet Stretchers.
P. S. & W.....per doz $2 00; dis 40&5 %
Sargent's.....per doz $2·88—dis 50&10&10 %

Casters.
Bed.....dis 30&10 %
Plate and Shallow Socket.....dis 40&10 %
Deep Socket.....dis 33½ %

Cattle Leaders......new list dis 60&10 %

Chain
English Coil.....net
lb.....12¾ 9¾ 8¼ 7¾ 7½ 7¼c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6¾-10-2.....by the cask, ₱ pair, gold 57c
Trace, 7-10-2.....by the cask, ₱ pair, gold, 62c
German Halter Chain.....dis 25 %
German Coil.....dis 25 %
Galvanized Pump Chain.....₱ lb 13c
Jack Chain, Iron.....dis 50 %
" Brass.....dis 40 %

Chalk.
White.....₱ gross, 63c net
Red.....₱ gross, 90c net
Blue.....₱ gross, $1·17 net
White Crayons.....₱ gross, 16½c net

Chisels.
Socket Framing, Douglass.....dis 60&10 %
" " Crossman.....dis 50&5&10 %
" " Hart Mfg. Co.....dis 60&10 %
" " Merrill.....dis 60&10 %
" Firmers, Douglass.....dis 50&10&10 %
" " Crossman.....dis 50&5&10 %
" " Hart Mfg. Co.....dis 60&5 %
" " Merrill.....dis 60 %
Socket Corner.....dis 60&10 %
Tanged Firmers.....dis 45&10 %
Butcher's.....$5·50 to £ gold
Newbould's.....$5·50 to £ gold
Spear & Jackson's.....$5·50 to £ gold

Clamps.
Cabinet.....dis 60&10 %
Judd's.....dis 45&10 %
Lambert's.....dis 20 %
Providence Tool Co.....dis 10 %

Clips, Axle.
Norway or Best.....dis 30 %
Superior.....dis 50 %
"Star," Superior Philadelphia.....dis 45&5 %

Coal Shovels.
Iron Handled.....₱ doz, $ 85 @ 1 25
Wooden Handled.....₱ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co.....dis 15 & 25 %

	13	14	15	16	17	18 inch.
Japanned	$6·00	6·35	6·75	7·50	8·00	per doz.
Galvanized	9·50	10·00	10·75	11·50	12·50	"

Morning Glory Funnel Hods—

No.	15	16	17	
Japanned	$9·00	10·50	12·00	per doz
Galvanized	13·00	14·50	16·00	"

Sidney Shepard & Co.'s new list.....dis 10 %

Cockeyes....1¼ in., 34c.; 1¼ in., 38c.; 1¾ in., 43c. net

Cocks.
Brass Racking.....dis 25 %
Lock and Globe.....dis 25 %
Lever Bibbs.....dis 25 %

Coffee Mills.
Board and Box.....dis 15 %
Increase Wilson's.....dis 15 %
Selsor's Pat.....$9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.).....dis 20 %
French Steel.....dis 15 %
The Swift.....dis 25 %

Compasses and Dividers.
Bemis & Call Co.'s.....dis 35&10 %
Cook's.....dis 15 %
Excelsior.....dis 30 %
Peck Stow & Wilcox.....dis 25 %

Coopers' Tools.
Bradley's.....dis 15 @ 20 %
Chas. E. Little.....dis 20 @ 25 %
Swan & Brombacher.....dis 15 @ 20 %

Corkscrews......dis 25 %

Corn Knives and Cutters.
Bradley's.....dis 10 %

Crow Bars.
Cast Steel.....₱ lb 11c. net
Iron, steel points.....₱ lb 6c

Crucibles.—Gautier & Co.....₱ No. 5½c

Curling Irons, &c.
⅛, ⅜, ½ in., $1·80, $2·00, $2·40.....dis 10 %
Curling Tongs.....₱ doz $6 50—dis 15 %
Pinching Irons.....₱ doz 7 50—dis 20 %

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass.....dis 20&10 %
Fitch's (List of No 240, $1).....dis 20&10 %
Rubber.....₱ doz, $9·00—dis 15 %
Lawrence Curry Comb Co.....new list, Jan., 18.5, dis 25 %

Curtain Pins.—Silvered Glass.....old list dis 52½ %

Cutlery.
American Table, Meriden, New list Jan. '75, dis 25 %
American Pocket, Cutlery Co, New list Jan. '75, dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co.....dis 20&10 %

Dippers.
Britannia.....per doz 75c—dis 30 %; by bbl. dis 33½ %
Cocoa, Plain.....per doz $3·25—dis 20 %
" Rimmed.....per doz $3·75—dis 20 %

Dog Collars.
Embossed Gilt.....dis 20 %
Leather.....dis 20 %
Brass.....dis 25 %

Door Springs.
Gray's.....$7·50 ₱ doz—dis 50&10 %
Torrey's Patent.....$7·50 ₱ doz—dis 55 %
Johnson's.....per doz $8 00 @ 4 00
Palmer's Japanned No. 6.....₱ doz $5·00
" Coppered " .....6·00 } dis 20 %
" Silvered " .....8·00
Challenge.—
Japanned.....₱ doz $4 00 @ 6 25—dis 40 %
Gem.—No. 1 large, Japanned.....per doz $4·00
No. 2 medium.....per doz 3·50 } dis 10 %
No. 3 small.....per doz 3·00
Barker's Concealed.....dis 12½ %

Drawing Knives.
Crossman's No. 1.....dis 50&5&10 %
Douglass.....dis 60&10 %
Hart Mfg. Co., No. 1.....dis 60 %
Merrill.....dis 60&10 %
Bradley's.....dis 25 %
Adjustable Handle.....dis 15 %

Drills.
Blacksmiths'.....each $2 60 net
Breast, P. S. & W.....dis 15&10 %
" Miller's Falls.....dis 25 %
" Aiken's.....$2·50; 4·00, dis 40 %
" Hotchkiss'.....dis 10 %
Ratchet, Merrill's.....dis 20 %
" Ingersoll's.....dis 25 %
" Whitney's.....dis 20 %
" Moore's Triple Action.....dis 20 %

Drill Chucks.—The Danbury.....each 10·00, dis 20 %
Beach Patent (Morse).....dis 15 %

Egg Beaters.

Monroe's	8 in.	10 in.
	Per doz $8·00	9·00

.....dis 10 %
Dover.....₱ doz net $6·00
National.....₱ doz $4·50—dis 20 %
Peerless.....₱ doz $4·00—dis 10 %

Emery.
Genuine Chester—Regular Nos.....₱ lb 7c } dis 10 %
" Flour and FF.....₱ lb 4c }
Washington Mills—Regular Nos.....₱ lb 8c
" Flour.....₱ lb 5c

Enameled and Tinned Ware.
Kettles.....dis 30 %
Sauce Pans.....dis 25 %
Glue Kettles.....dis 20 %
Tinned Saucepans.....dis 25 %

Escutcheons.
Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 60&10 %
Wood.....dis 25 %

Faucets.
Fenn's.....dis 50 %
" Cork Stops.....dis 40 %
Star.....dis 55&10 %
Frary's Patent Petroleum.....dis 15&10 %
Taylor's Pattern.....dis 20&10 %
Wood and Metallic.....dis 40 %
Wood, Cork Lined.....dis 60&10 %
Enterprise Mfg. Co., Self-Measuring.....dis 20 %

Felloe Plates......₱ lb 14c; dis 10 %

Files.
American File Co.....$5 00 to £ curreney—dis 10 %
Nicholson.....new list, Jan. 1, 1875, net
Hartford File Co.....$5 50 to £ currency—dis 10 %
" Western".....5 00 to £ net
Rothery's.....$5 to £ currency
" Horse Rasps.....3 50 to £ gold
Stubs'.....$ 50 @ 9 00 to £ gold
Butcher's.....5 25 to £ gold
Walter Spencer & Co.'s "Diamond".....5 25 to £ gold
Spear & Jackson's.....5 00 to £ gold
Jowitt's.....5 25 to £ gold
Newbould's.....5 25 to £ gold
W. K. & C. Peace's "Imperial".....5 25 to £ gold
R. Ibbotson.....5 00 to £ gold
Fisher's.....4 75 to £ gold
Goodlad's.....4 00 to £ gold
Moss & Gamble.....5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.).....5 00 to £ gold
" " Horse Rasps.....5 25 to £ gold
"Philo Sheffield," P. T. Co.....5 00 to £ gold
Limet & Co. (French).....4 50 @ 5 00 to £ gold

Fluting Machines.
Mrs. Coles'.....5 in., $6·00; 7 in., $7·00
" Pony, 4 in., $4·75; 5 in., $5; 6 in., 5·50; 7 in., $6
Knox, with 4-inch Rolls.....5 75 each } dis 20 %
" " 6 " " .....7 00 each }
" " 8 " " .....9 00 each }
O. K.....6 50 each net
Peerless, 4-inch Rolls.....4 00 each net
" 5 " " .....4 75 each net
Excelsior, No. 1.....4 75 each net
" No. 2.....6 50 each net
Diamond.....7 50 each net
Climax 7-inch Rolls.....8 00 each net
" 4½ " .....6 50 each net
Empire.....4 00 each net
Eureka, No. 1, 7-inch Roll.....8 00 each net
" No. 2, 5-inch Roll.....6 00 each net
K. F. M., 4½-inch Roll.....5 50 each dis 15 %
" 6-inch Roll.....6 00 each dis 15 %
Myers' Fashion Fluter, 4½ inch Rolls.....8 00 each net
" Convex Brass Fluter, Sad Iron attachment.....$1·75
Domestic Fluter.....$1·75 each net
Fairy, Self-Heater.....00 each net
Geneva Hand Fluter.....$15 00 per doz net
Champion, 6 inch rolls.....$8 00 each dis 10 %
" 4 inch rolls.....$6 00 each dis 10 %

Fluting Scissors......dis 25&10 %

Forges.
"Empire" (W. P. Kellogg & Co.).....dis 20 %

Forks.
Hay, Manure & Spading.....dis 30 %
Plated A 1.....dis 50 %

Fry Pans.
Burnished, P. S. & W., new list.....dis 45 %
₱ doz.....$3·00 3·75 4·25 4·75 5·25 6·00 7·00 8·00 9·00
No.....0 1 2 3 4 5 6 7 8
Smith, Burns & Co., "Excelsior" Polished.....dis 35 %
₱ doz.....$3·70 4·00 4·70 5·30 6·00 7·00 8·00 9·00
No.....1 2 3 5 6 7 8

Gas Stoves.
Tiff & Howard.....dis 20 %

Gauges.
Marking.....dis 4%&10 %
Wire.....dis 10 %

Gimlets.
Nail and Spike.....dis 25&10 %
Double Cut, Shepardson's.....dis 20 %
" " Ives'.....dis 25 %
" " Douglass'.....dis 20&10 %

Grind Stones.—J. F. Green & Bro.....dis 20 %

Grind Stone Fixtures
Sargent's Patent.....dis 65&10 %
Reading Hardware Co.....dis 66⅔&7½ %
Hart Mfg. Co.'s.....dis 60&5&10 %

Hammers.
Emmet Hammer Co.'s Handled.....dis 25 %
" " Sledge & Stone..₱ lb 25 @ 50c net
Humason & Beckley Mfg. Co.....dis 16⅔&10 %
Maydole's, new list.....dis 5 %
Cheney's.....new list dis 10 %
Mason's.....dis 10&10 %
Yerks & Plumb.....dis 12½ %
Magnetic Tack.....dis 2 &10 %
Warner's.....list net

Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair.....dis 25 %
" Leg Irons $5 50 per pair.....
Providence Tool Co.'s Hand Cuffs $15 per doz } dis 10 %
" Leg Irons 25 " }

Handles.
Wrought Chest.....dis 60&10 %
Surface Chest.....dis 65&10&10 %
Flush Chest.....dis 60&10&10 %
Lifting.....dis 60&10 %
Coffin.....dis 50&10 @ 60&10 %
Saw and Plane.....dis 30&10 %
Hammer and Hatchet.....dis 10 %
Greensboro', Axe, Pick, Hammer, &c.....dis 10 %
North Carolina Handle Co.....dis 10 %
Woolworth Axe, Pick and Sledge.....dis 10 %
Brad Awl.....per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 2 &10 %
" " " large " 6 50—dis 20&10 %
Apple " " ass'td " 6 00—dis 20&10 %
" " " large " 7 50—dis 20&10 %
Socket " " ass'td " 3 50—dis 2 &10 %
" Framing " " 7 00—dis 20&10 %
File " " 4 00—dis 20&10 %
Auger " " 6 50—dis 20&10 %
" " large " 8 00—dis 20&10 %
Patent Auger, Ives'.....dis 25&10 %
" " Douglass'.....per set $1 25—dis 10 %
" " Swan's.....per set $1 00—dis 10&10 %

Hangers.
Barn Door.....dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.).....dis 30 %
Novelty.....dis 30 %

Harness Snaps.
Henshaw's.....dis 25&10 %
Judd's.....dis 40 %
Fitch's (Bristol).....dis 30 %
Hotchkiss'.....dis 10 %
Andrews'.....dis 25 %
Sargent's.....dis 50&10 %
New York Wire.....dis 2 &20 %

Hatchets.—Josiah Blood.....dis 10 %

Shingling, Nos.	1	2	3	
Claw, "	1	2	3	₱ doz $7 50 8 00 9 50
Lathing, "	1	2	3	₱ doz 7 50 8 00 8 50

Hunt's.....dis 10 %

Shingling, Nos.	1	2	3	₱ doz $7 25 8 00 8 75
Claw, "	1	2	3	₱ doz 7 75 8 50 9 25
Lathing, "	1	2	3	₱ doz 7 50 8 25 9 00

Hurd's.....dis 25 %

Shingling, Nos.	1	2	3	₱ doz $8 00 8 50 9 00
Claw, "	1	2	3	₱ doz 9 00 9 50 10 00
Lathing, "	1	2	3	₱ doz 8 00 8 50 9 00

Newark's Edge Tool Co.'s.....dis 25 %

Shingling, Nos.	1	2	3	₱ doz $6 50 7 00 7 50
Claw, "	1	2	3	₱ doz 7 25 7 75 8 25
Lathing, "	1	2	3	₱ doz 6 50 7 00 7 50

Yerkes & Plumb.....dis 12½ %

Shingling, Nos.	1	2	3	₱ doz $7 00 7 50 8 00
Claw, "	1	2	3	₱ doz 7 50 8 00 8 50
Lathing, "	1	2	3	₱ doz 7 00 7 50 8 00

Simmon's.....dis 15 %

Shingling, Nos.	0	1	2	3		₱ doz $7 50 8 00 8 50 9 00
Claw, "		1	2	3		₱ doz 9 00 9 50 10 00
Lathing, "		1	2	3		₱ doz 8 00 8 50 9 00
Broad, "		1	2	3		₱ doz 9 00 10 00 12 00
"		4	5	6		₱ doz 14 00 16 00 18 00
"		7	8			₱ doz 20 00 22 00

Elephant.....dis 25 %

Shingling, Nos.	1	2	3	₱ doz $8 00 8 50 9 00
Claw, "	1	2	3	₱ doz 9 00 9 50 10 00
Lathing, "	1	2	3	₱ doz 8 00 8 50 9 00

J. P. Verree & Co.....dis 5 %

Shingling, Nos.	1	2	3	₱ doz $7 00 7 50 8 00
Claw, "	1	2	3	₱ doz 7 50 8 00 8 50
Lathing, "	1	2	3	₱ doz 7 00 7 50 8 00

Underhill's.....dis 10 %

Shingling, Nos.	1	2	3	₱ doz 7 25 8 00 8 75
Claw "	1	2	3	₱ doz 7 75 8 50 9 25
Lathing, "	1	2	3	₱ doz 12 00 11 00 13 00

Hinges.
Gate, Western.....₱ doz $6·25—dis 60&10 %
" N. E.....₱ doz 11·25—dis 6 .&10&10 %
" N. Y. State.....₱ doz 7·20—dis 60&10 %
Rolled Plate.....dis 65&10 %
" Raised.....dis 65&10 %
Wrought Strap and T.....dis 35&10 @ 40&10 %
Providence Plate. 6 and 8 in. 11c ₱ lb; over 8 in. 9½c ₱ lb } dis 25 @ 30 %
Screw Hook and Strap. 8, 10, 12, 14 in. 7c; 14 to 36 in. 6c } net
Heavy Welded Hook. 8 to 12 in., 6½c; 14 in. & up, 6c } net
Screw Hook and Eye. ⅜ to 1 in., 9½; ⅝ in. 9½; ⅞ in. 11½ } net

Screw Hook and Eye, Sargent's—

	⅛	¼	⅜ inch.
Per doz pairs	$4·75	7·25	10·25—dis 65&10&10 %

Hoes.
Solid Shank, C. S.....₱ doz $8 00—dis 30 %
Socket.....₱ doz 9 00—dis 30 %
Riveted Eye.....₱ doz 5 00—dis 30 %
Grub.....dis 25 %
Planters.....net @ 10 %
Scovill.....add 33⅓ %
Scovill Pattern.....net @ 5 %
Lane's C. S. Cresent, American Pattern.....add 5 %
" " Scovil Pattern.....add 15 %

Hooks.
Bird Cage.....dis 60&10 @ 70&10 %
Cotton.....dis 50 %
Belt.....dis 50&10 %
Bench—Skinner's.....per doz $8 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ₱ doz.....dis 10 %
Bench—Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" —McGill's.....$8 00 per doz, dis 10 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling. Hart's list.....dis 60&10&10 %; Sargent's list.....dis 6 &5&10 %; Reading list.....dis 33⅓&10 %
Wrought Staples and Hooks and Staples.....dis 70&10 %
Wire Screw Hooks and Eyes.....dis 65&10&10 %
Grass.....dis 2 %
Whiffletree—Patent.....dis 30 %
Hooks and Eyes—Malleable Iron.....dis 60&10&10 %
" " Brass.....dis 60&10&10 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable Horse Nail Co.

No.	5	6	7	8	9	10
Ausable	30c	27c	25c	24c	23c	22c
Pointed and Polished	31c	28c	26c	25c	24c	23c
Pointed and Blued	32c	29c	27c	26c	25c	24c

In lots of 1000 lbs. 5% discount.
Brundage.

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9
	31c	28c	26c	25c	24c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).

No.	5	6	7	8	9	10
Patent Finish	23	21	23	22	21	20
Extra "	30	27	25	24	23	22

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
U B	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis 5 %.
Star Brand.....₱ lb 16c
Morgan.....14c

Horse Shoes.
Burden.....₱ keg, $5 85
R. I. Horse Shoe Co., Perkins Pattern.....₱ keg, 5 85
" " R. I. Pattern.....₱ keg, 6 45
Mule Shoes.....₱ keg, 6 85

Kettles.
Brass.....₱ lb 45c net
Enameled.....dis 30 %

Knives.
Ames' Butcher Knives.....dis 20 %
" Shoe " .....dis 15 %
" Bread " .....₱ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's".....dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives.....dis 25 %

Knobs.
Carriage.....dis 60&10 %
Base—Common.....net
" Plush Tip.....dis 10 %
" Elastic End, No. 8.....dis 30&10 %
Door, Mineral.....₱ doz $2·25
" Por. Jap'd.....₱ doz 3·00 } dis 45&5&2 %
" " Plated.....₱ doz 7·00
" " Por.....₱ doz 7·50

Ladles.
Melting, Hart's.....dis 35&10 %
" Sargent's.....dis 5 &10 %
" Reading.....dis 15&10 %

Lanterns.
Tubular.....No. 0, $12 50—dis 15 %
Peerless.....No. 8, per doz $11·75—dis 10&10 %
Brady's Patent.....dis 10 & 10 %
Etna.....dis 10 & 10 %
Yankee.....dis 10 & 10 %
De Beque.....dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch.....each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined.....per doz $6 30, dis 10 %

Lines.
Linen Fish.....dis 10&10 %
Cotton Chalk.....dis 40 %
Silver Lake Chalk.....dis 10&10 %
Mason's.....dis 10&10 %
Galvanized Wire Clothes.....$1 per 100 ft. dis 33½ %

Locks and Latches.
Cabinet—Gaylord.....dis 25 %
" Eagle.....dis 22 %
Trunk " .....new list dis 25 %
Langstroth & Crane, Round Key.....dis 40 %
" " Flat Key.....dis 33½ %
Barnes & Deitz.....dis 25 %
Continental.....dis 15 %
Shepardson's.....dis 20 %
American Lock Co.....dis 35½ %
Plate.....dis 25 %
Yale Lock Co.....dis 40 %
Sargent & Greenleaf.....dis 20 %
Trenton
Branford
Norwich
Russell & Erwin
Norwalk
Nashua
Mallory, Wheeler & Co.
P. & F. Corbin
Parker & Whipple
Jacobus & Nimick Mfg. Co.
} Rev'd list of Jan. '75 dis 45&5 %. 2 % extra for cash.
Padlocks, Russell & Erwin
" Mallory, Wheeler & Co.
" Wm. Wilcox & Co.
" Romer's
" Vulcan Hardware Co.
" New York Lock Co.
" J. H. McWilliams
" Scandinavian Jail
" Barnes & Deitz.
" D. K. Miller Lock Co.
} List of Jan., '75. dis 50&5&2 %

Mallets.
Hickory and Lignumvitæ.....dis 20 %

Meat Cutters.
Dixon's (P. S. & W.).....dis 10 %

No.	1	2	3	4
₱ doz.	$14 00	$17 00	$19 00	$30 00

Hales'.....dis 25 %

No.	11	12	13
₱ doz.	$27 00	$33 00	$42 00

Miles Challenge.....dis 20 %

No.	1	2	3
₱ doz.	$22·00	$30·00	$40 00

Perry's Champion (P. S. & W

Tapes, Measuring.
American Flask and Cap Co.....dis 20 %
Eddy's.....dis 20 %

Tea Trays.
American Tea Tray Co.....dis 15 %

Thermometers.
Tin Case.....dis 50&10 %

Toe Calks.
.....₩ ℔ 13c net

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 20 %
Morse's.....₩ doz $12 00—dis 10&10 %
Wood Bottom.....per doz $12—dis 25&10 %
All Iron.....per doz $19 50—dis 25&10 %

Tinners' Tools and Machines.
P. S. & W.....list net

Traps.
Newhouse.....dis 20 %
Peck, Stow & Wilcox.....dis 30 %
Blake's Patent.....new list dis 25 %
Mouse, Wood Choker.....₩ doz holes, 15 @ 16c
" Patent Chocker (Union Nut Co.).....₩ doz holes 16 @ 18c net
" Round, Wire.....₩ doz $1 00 to 2 00 net
" Square, " .....₩ doz 2 00 to 2 50 net
" Cage, " .....₩ doz 2 50, dis 10 %

Trowels.
Lothrop's Brick and Plastering.....dis 10 %
Disston's Plastering.....dis 12½ %
Disston's Brick.....dis 12½ %
Rose's Brick.....dis 5 %
Brades' Brick.....gold. dis 10 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 25 %

Triers.
Butter and Cheese.....dis 25 %

Ventilators (Window).
Nickel and Glit.....per dozen $16 00 @ 18 00

Vises.
Trenton Vises, Solid Box.
30 to 160 lbs.....16c
160 and over.....15c
Peter Wright's.....₩ ℔ 15½c. gold
Wilson's Solid Box.....dis 15 %
30 to 160 lbs.....18c
160 and upward.....22c
Wilson's Parallel.....dis 30 %
Sargent's " .....dis 30&10 %
Backus & Union, Parallel.....dis 25 %
Buffalo, Parallel.....new list dis 25 %
Fisher & Norris' Double Screw Parallel.....dis 15&10 %
Trenton Parallel.....dis 15 %
Merrill's Parallel.....dis 15 %
Parker's.....dis 20 %
Stephens' Parallel.....dis 15 @ 20 %
Bonney's Saw Filers.....per doz $20—dis 25 %
Stearn's Saw Filers.....per doz $20—dis 25 %

Wheel Barrows.
Canal (Fugsley & Chapman).....new list dis 10 %
Coal, Garden and Stone (Fugsley & Chapman).....dis 25

Well Wheels.
Revised list.....dis 60&10 %

Wire.
Brass and Copper.....dis 10 %
Bright and Annealed.....Nos. 0 @ 18 dis 35 @ 47½ %
" " " " 19 @ 26 dis 55 @ 57½ %
" " " " 27 @ 36 dis 60 @ 62½ %
Coppered.....0 @ 18 dis 40 @ 42½ %
Galvanized, Nos. 7 to 18.....market list dis 10 @ 15 %
Tinned.....dis 25 @ 30 %
Cast Steel.....dis 15 @ 20 %
Tinned Broom Wire.....dis 30 @ 35 %
Galvanized Telegraph, Nos. 8 and 9.....₩ ℔ 9c @ 9½c
Galvanized Telegraph, Nos. 10 and 11.....₩ ℔ 10c @ 10½c
" " " 12.....₩ ℔ 10½c @ 11c
Annealed Fence, Nos. 8 and 9.....dis 45 @ 55 %
" Grape, " 10 to 14.....dis 45 @ 50 %
Fence Staples.....₩ ℔ 7½ @ 8 ℔
Stubs' Steel Wire.....$7 00 to £ gold
Judd's Picture Wire.....dis 50

Wrenches.
American Adjustable.....dis 45 %
Baxter's Adjustable "S".....dis 20 %
" Diagonal.....dis 20 %
Collins & Co.'s.....dis 45 %
Coes' Genuine.....dis 40&5 %
" Pattern (Wrought).....dis 50&10 %
" (Malleable).....dis 60&10 %
Lindsay's Patent.....dis 25 %
Taft's Pattern.....dis 70 %
Davis' Patent Duplex.....new list dis 25 %
Bemis & Call's Patent Combination.....dis 20&5 %
" " Merrick's Pattern.....dis 25&2½ %
" " Brigg's Patent.....dis 15&10 %
Aiken's Pocket.....per doz $10 00—dis 45&10 %

Wringers.
Providence.....₩ doz $64 00
Reliance.....₩ doz 61 00
Universal—Extra.....₩ doz 64 00
Novelty.....₩ doz 64 00
Sherman.....₩ doz 64 00
Eureka (Friction).....₩ doz 60 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 5 %.
COMMON STAMPED WARE, &C.
Bucket Covers.

Quarts	½	1	2	3	4
Inch	4½	5 3-16	6 5-16	6½	7 11-16
Per gross	$2 00	2 60	3 40	4 25	5 75
Quarts	6	8	10	12	
Inch	8¾	9½	9¾	10 9-16	
Per gross	$6 50	8 00	8 50	11 50	

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12¾	13¾
Per gross	$15 00	18 00	22 00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5 75	6 00	6 25	6 75	7 25	8 25
Inch	10¾	11¼	11¾	12¼	12¾	13¼
Per gross	$8 75	9 50	10 00	13 00	13 75	16 50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4 00	4 50	5 50	5 50	8 50	10 50

Deep Pie Plates.

Inch				9		10
Per gross				$8 50		10 50

Jelly Cake Pans.

Inch				9		10
Per gross				$7 50		10 00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3¾	3¾	4½	5	
Per gross	$1 15	1 40	1 60	2 00	2 75	3 00
Rimmed	2¾	3	3¾	4	4½ inches.	
Per gross	$2 25	2 50	3 00	3 50	4 00	

T. K. Breasts only.

Inch	7½	8	8¾	9	9¾	10	10¾	11	11½
Per gro.	$6 00	6 50	6 75	7 25	7 75	9 50	10 00	12 00	13 00

Grater Plates.

Sheet			¼		½		1
Per gross			$5 00		6 00		11 50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes	per gross, $8 00	11 50
With Tubes	10 50	14 00

Stamped Square Pans.

No.				¼	
Per gross				$7 50	14 50

Common Square Pans (One Sheet).

Per gross					$11 50

Milk Skimmers (Plain or Pierced).

Per gross					$4 00

Lettered Plates.

Inch				5¼		6
Per gross				$3 25		4 00

Steamer Bottoms.

Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain.....per gro.	$4 00	4 50	5 00	5 50	6 00	7 00
Jap'd or Burn'd.. "	6 00	6 50	7 00	8 00	9 50	10 00

Coffee Boiler Lips.

	Small.	Large.
To Rivet.....per gross,	$0 80	1 10
To Solder "	1 25	

DEEP STAMPED AND RETINNNED WARE, dis 25 %

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	quarts.	2½ quarts.
Per doz	$0 90	1 15	1 50	1 85	2 50

Retinned Milk Pans.

Qts.	1	1½	2	3	4	5	6	8	10	12
₩ doz.	1 20	1 30	1 75	2 00	2 25	3 15	3 50	3 85	4 75	5 25	5 75

Dipper Bowls, Plain Stamped—

Pints	½	1	Quarts	1	2	2½
Per doz.	60	75	Per doz	1 00	1 25	1 75

Dipper Bowls, Retinned—

Pints	½	¾	1	Quarts	1	2	2½
Per doz.	75	90	1 05	Per doz	1 40	1 75	2 25

Pans.
Dish Pans, Retinned Deep—

Quarts	7	8	10	14	17	21	30
Per doz	8 50	9 50	11 00	13 00	16 00	19 00	30 00

JAPANNED TIN WARE, dis 5 %.

Canisters, Common	Pound	½	1	2	3
	Per gross	$10 50	15 00	24 00	30 00
Canisters, Hinged	Pound	1	1½	2	3	4
	Per gross	$19 00	25 00	32 00	37 00	42 00
Canisters, Square	Pound	2	4	6	8	12	16
	Per doz	$3 00	4 25	5 00	5 75	8 00	9 00

Candlesticks, Japanned				No.	1	2
				Per gross	$8 00	7 00
Cake Boxes, Round					per nest,	$7 25
Square					per nest,	4 25
Chamber Pails, Japanned						
Nos.			2	3	4	5
Green, per doz.			$8 00	9 00	11 00	13 00
Oak "			10 00	11 00	12 00	15 00
Dust Pans, Corrugated					per gross,	$22 00
Box Graters					per gross,	$8 75
Molasses Cups	Pint	½	1	2	4	
	Per gross	$13 00	16 00	38 00	42 00	
Lunch Boxes, per doz			7 in $2 00; 8 in. $2 50			
Pepper Boxes Japanned			₩ gross small, $8 00; large, $4 00			
Toy Banks, House				No.	1	2
				Per gross	$7 00	5 00
Toy Banks, Gothic	No. 1, $4 00, No. 2, 4 00 per gross					
Toy Cups, Straight				No.	1	2
			Per gross	$3 75	3 25	2 75
Toy Cups, Flaring	No. 1, $4 25; 2, $3 75 ₩ gross					
Toy Pails, Covered	No. 1, per gross				$4 00	
Toy Rattles	per gross,				$2 00	
Trunks, Wire Handled	per nest (5)				$1 75	
Spittoons, Tin	per gross,				$27	

PLANISHED TIN WARE, dis 25 @ 30 %.

Planished Coffee Pots, Round.

Each	60	75	85	95	1 15	1 35	1 50	1 40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round.

Each							
Pints	70	80	90	95	1 05	1 25	
Pints	2	3	4	5	6		

Planished Tea Pots, Oval.

Each	70	80	90	1 05	1 15	1 40	1 75
Pints	1	2	3	4	5	6	8

Planished Pepper Boxes, No. 1.....per doz., $1 52
Planished Flour Dredges, No. 8, $2 10; 4, 2 45 ₩ dozen.
Planished Round Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1 00	1 10	1 20	1 40	1 60	2 00

Planished Oval Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1 15	1 25	1 40	1 60	1 80	2 25

Planished Oval Chafing Dishes, Imperial Covers.

Inch	10	12	14	16	18	20	22	24
Each	$3 85	5 00	6 25	7 60	9 00	11 50	15 00	16 50

Planished Oval Chafing Dishes, Low Covers.

Inch	10	12	14	16	18	20
Each	$3 25	4 35	5 20	6 20	7 80	9 25

Planished Low Dish Covers.

Inch	10	11	12	14	16	18	20
Each	$ 70	80	1 00	1 25	1 50	2 00	2 75

Planished Imperial Dish Covers.

Inch	10	11	12	14	16	18	20	22	24
Each	$1 35	1 70	2 00	2 60	3 15	3 45	4 60	5 45	6 30

Planished Etnas, on Stands.

Pints	1½		3	4	5
Each	$0 90	1 00	1 20	1 50	1 75

Planished Liquor Mixers.....Nos. 0 1 2
Per doz $2 00 2 10 2 45

Planished Oval Melon Molds.

Nos.	2	3	4	5	6	7	8	9
Each	60	65	70	80	90	1 00	1 15	1 35

Planished Oval Tumbler Warmers.
To fit 1, 2, 3, and 4 O. G. Urns.....each, $2 50
Planished Oval O. G. Urns.

Nos.	0	1	2	3	4	5	6	7	8
Each	$4 90	5 45	6 30	7 00	7 75	9 25	11 25	12 50	15 00

Planished Round Urns.

Nos.	0	1	2	3	4	5	6	7
Each	$4 20	4 85	5 45	6 30	7 75	9 00	11 00	14 25

Planished Round Oyster Dishes, (Complete)..Nos. 1 2
Each $2 10 2 40
Planished Oyster Dish Plates.....Nos. 1 2
Each $0 25 0 30
Oyster Dish Covers.....Nos. 1 2
Each $0 30 0 35

Tea Pot Handles—P. S. & W.....dis 20 %

Stow's Patent Hollow Tea Pot Handles.

No. 1, Small	⅝ inches	per gross,	$11 50
No. 2, Medium,	¾ "	"	12 50
No. 3, Large,	⅞ "	"	13 50
No. 4, Ex. Large	1 in., for Wash Pitchers &c.	"	18 00

Solid Iron, Tin Tipped.

No. 10, Small,	4¾ inches	per gross,	$9 00
No. 15, Medium,	5¾ "	"	9 50
No. 20, Large,	6¾ "	"	10 75

Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.

No. 12, Bronzed and Tin-Tipped.....per gross, $13 50
Wrought Handles, Of Best Malleable Iron.
P. S. & W.....dis 30 %

Japanned.

No. 1, 5½ inches long			per gross,	$3 50
No. 2, 6	"	"	"	3 75
No. 3, 6½	"	"	"	4 00
No. 4, 7¼	"	"	"	4 25
No. 5, 8	"	"	"	4 50
No. 6, 9	"	"	"	4 75

Tinned.

No. 1, 5½ inches long			per gross,	$4 25
No. 2, 6	"	"	"	4 50
No. 3, 6½	"	"	"	4 75
No. 4, 7¼	"	"	"	5 25
No. 5, 8	"	"	"	5 50
No. 6, 9	"	"	"	5 75
Japanned			per lb.,	16
Tinned			"	20

Iron Kettle Ears (P., S. & W.).....dis 45 %
Half gross pairs in a package.

Tinned.

Nos.	1	2	3	4	5	6	7
Per gross pairs.	88c	$1 00	1 50	1 75	2 10	2 75	3 75

Black.

Nos.	1	2	3	4	5	6	7	8
Per gross pairs.	75c	88c	$1 25	1 50	1 75	2 25	2 75	4 00

Tinned Tea Kettle Ears.

Nos				4	5	6
Per gross pairs				$1 75	2 10	2 75
Extra Heavy Tinned Acme Ears—French Pattern.						
Nos.			3	4	5	6	7
Per gross pairs			1 00	1 25	1 50	1 75	2 00	2 50	3 00
Malleable Iron Kettle Ears for Coal Hods &c.									
P., S. & W.									dis 20 %
No. 10 Small						₩ ℔. Tinned 2½c; Black, 16c			
No. 20 Medium						₩ ℔, " 30c; " 16c			
No. 30 Large						₩ ℔, " 30c; " 16c			
No. 40 Extra Large						₩ ℔, " 20c; " 16c			

In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in..dis 25 %
Plain, 8c.; Japn'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned.....20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.).....dis 35 %
Plain with drilled holes, per lb.....9c
Plain with Cast " " 8c
Plumbers' Scrapers—(P. S. & W).....dis 25 %
Extra quality, length 6 in., per doz.....$4 00

METALS.

IRON.—DUTY Bars, 1 to 1¼ cents per lb., Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 2 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.

Foundry No. 1	₩ ton,	$27 00 @ 28 00
Foundry No. 2	"	25 00 @ 26 00
Gray Forge	"	23 00 @ 27 00
White and Mottled	"	

SCOTCH.

Coltness	"	37 00 @ 38 00
Glengarnock	"	36 00 @ 37 00
Eglinton	"	33 50 @ 34 00

Bar Iron.
Am. rennied, at mill.....nominal

Rails.
Welsh, gold.....₩ ton,
American, at works, currency....." 48 00 @ 53 00
Old Rails.....27 00 @ 28 00

Scrap.
Wrought Scrap....." 34 00 @ 35 00

Bar Iron from Store.

Common Iron. ⅜ to 3 in. round and square	₩ ton	$60 00 @ 62 50
1 to 6 in. x ⅜ to 1 in.		
Refined Iron. ⅜ to 3 in. round and square	"	62 50 @ 65 00
1 to 6 in. x ⅜ to 1 in.	"	67 50 @ 70 00
1 to 6 in. x ⅛ and 3-16	"	75 00 @ 80 00
Shafting Iron—2½ to 4 in.	"	67 50 @ 110 00
Rods—3-16 to ⅝ round and square	"	80 00 @ 82 50
Bands	"	90 00 @ 135 00
Hoops—⅜ to 2 in.		
Swedish Iron. Ordinary sizes	"	130 00 @ 132 50
Plow size	"	145 00 @ 150 00

Sheet Iron.

American and English.	Common R. G. American.	R. G. English.
Nos. 10 to 20 ₩ ℔	4½c	5½c
21 to 24 "	4¾c @ 4¾c	5¾c
25 to 26 "	4¾c	5¾c
27 "	5c	6c
28 "	5½c	6½c

Galvanized, 1, to 30, prime, ₩ ℔ 9; 2d quality...₩ ℔ 8c

"	21 to 24	"	"	10	" 9c
"	25 to 26	"	"	11	" 10c
"	27	"	"	12	" 11c
"	28	"	"	13	" 12c

Patent Polished.....₩ 15c
Russia, Nos. 8 to 26....." 17½c
" Stained, No. 1....." 16½c
Belgian....." 10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON

⅜	½	⅝	¾	1 inch.
$3 50	4 50	5 25	6 50	per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$5 00	7 00	9 50	12 00	14 00 per doz.

COPPER—DUTY. Pig, Bar and Ingot, &c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.
American Ingot.....₩ ℔ 22 @ 22½c
English " "
SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot.....33c ₩ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot.....35c. "
Braziers' Copper, 12 oz. per square foot and lighter.39c. "
Circles less than 24 inch in diameter.....35c ₩ ℔
Circles, 24 inch diameter and over.....39c. "
Segment and Pattern Sheets.....35c. "
Locomotive Fire Box Sheets.....33c. "
Sheathing Copper, over 12 oz. per sq. ft.....31c. "
" 12 oz. ₩ sq. ft. and lighter...39c. "
Bolt Copper.....38c. "
Copper Bottoms.32 c. ₩ ℔.....net
No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier	36c.	By the case,	c. ₩ ℔
12 oz. and lighter	39c.	"	38c "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier.....38c. By the case, 37c. ₩ ℔
(And all sizes not over 60 inches wide.)

30x60

14 and	oz. and heavier	40c. ₩ ℔
12 oz.		43c. "

TINNING.
14x48, by the case.....8c. ₩ sheet
14x48, less than case.....10c. "
Boiler Sizes, 7 and 8 inch.....12c. "
" 9 inch.....15c. "
Other sizes not larger than 30x60.....2½c. ₩ sq.
Larger than 30x60.....3c. "
LEAD—DUTY Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.
Spanish.....6¾ @ 7c gold
German Refined.....6½ @ 6¾c gold
English.....6¾c. gold
American.....6¾ @ 6¾c gold
Bar.....dis 10 %.....8½c.
Pipe.....dis 10 %.....8½c.
Tin Lined Pipe.....dis 10 %.....16½c.
Sheet.....dis 10 %.....8½c.
Shot.....dis 10 % Drop, 9c. Buck, 9½c.

BABBITT METAL.

A. P. U.					₩ ℔ 8½ @ 9c
A. 25c.; B. 30c.; C, 15c.; D, 12c., ₩ ℔.					
SOLDER.....	No. 1. 15c;	No. 2. 13½ @ 14c			
STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3¾ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, whatever form or description shall be classed as					

American Cast Steel.

Tool	15 @ 16c
Spring	10c
Homogeneous	12½c
Tire	12½ @ 13½c
Machinery (round and square)	10 @ 11c
File	11c
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
" circular as to size	18 @ 30c

Chrome Steel.

Tool	₩ ℔ 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₩ ℔ 12c and upward
Machinery	₩ ℔ 14c
Hammer	" 15c,
Gun or Homogeneous	" 16c

English Steel.—payable in gold, dis 5 % cash.

"	Best Cast	₩ ℔ 18c
"	Extra Cast	" 19c
"	Round Machinery, Cast	" 11½c
"	Swaged, Cast	" 18c
"	Best Double Shear	" 18c
"	Blister, 1st quality	" 13½c
"	" 2d quality	" 11½c
"	" 3d quality	" 10½c
German Steel, Best		" 11½c
do 2d quality		" 10½c
Sheet Cast Steel, 1st quality		" 18c
" " 2d quality		" 16c
" " 3d quality		" 14c
File Steel, Flat and ½ Round		" 12½c
" Square and Round		" 13c
" Mill		" 13½c
" Taper 3 and 3¼ inch		" 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.
Silesian, cash.....6¾ @ 7c., gold
American " .....6¾ @ 11c., currency
TIN—DUTY: Plates, Sheets, Tagger and Terne, 1½c. per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Bancs, subject to duty of 10 per cent
Banca.....₩ ℔ 26c., gold
Straits.....₩ ℔ 23½c., gold
English.....₩ ℔ 22c., gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal			11 50 @ 11 75
12x12,	"		12 00
14x20,	"		12 25
I X 10x14,	"		13 75
12x12,	"		14 25
14x20,	"		14 75
D C 12½x17	"		11 00
D X 12½x17	"		13 25
For each additional X add			2 25

COKE TIN PLATE.

	Best 2d Quality.	Ordinary.
I C 10x14	$10 25 @ 10 75	9 25 @ 9 75
I C 12x12	10 50 @ 10 75	9 25 @ 9 50
I C 14x20	10 50 @ 11 00	9 25 @ 9 50

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$0 50	9 50 @ 10 00	8 25 @ 9 25
I X 14x20	12 75		
I C 20x28	21 00 @ 21 50	19 50 @ 2 00	16 50 @ 18 00
I X 20x28	26 00		
I C 20x20	24 00		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ ℔. All subject to a reduction of 10 per cent.
Sheet.....cask 10½c
" .....open 10½c

Old Metals.

(Dealers' Selling Prices.)

Copper	@ 20
Yellow metal	14 @ 15
Brass	13 @ 14
Heavy Composition	17 @ 18
Old lead, solid	6 @ 6½
Tea lead	5
Wrought Iron	1½ @ 1¾
Sheet Iron	0¾ @
Cast iron	1 @ 1¼
Machinery Iron	1¼ @
Zinc	5 @ 5½
Pewter, No. 1	17
" No. 2	10 @ 12
Spelter	5½ @ 6

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ℔ 30c
" " Ordinary	9c
" Ivory Drop, fair	15c
" " best	20c
Black Paint, in oil	kegs, 8c.; asst'd cans, 11 c
Blue, Prussian, fair to best	50 @ 75c
" " " " in oil	35 @ 65c
" Chinese, carriage	8c
" Ultamarine	25 @ 30c
Brown, Spanish	1½c
" Van Dyke	9c
Carmine, 40	$12 00
Green, Chrome	15 @ 22c
" " in oil	18 @ 25c
" Paris	good, 30c; best, 40c
" " in oil	" 30c " 45c
Mineral Paints	1½ @ 4c
Orange Mineral	14½c
Red Lead, American	9½c
" " English	10½c
" Venetian (N. C.) dry	2½c
" " in oil	asst'd cans, 11c; kegs, 8½c
" Indian, dry	10c
Rose Pink	18c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	16 @ 20c
" Raw "	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	
" English	1 9 gold
" Trieste	1 65 "
" American, Common	23c
White Lead, American, pure dry	10c
" " in oil	11c
White, Paris, English, prime	in bbls. 2½c
Yellow Ochre, French	2½ @ 2¾c
" " in oil	asst'd cans, 11c; kegs, 8½c
" " Vermont	in casks 1½c
" Chrome	17 @ 21c
" " in oil	18 @ 22c
Zinc White, American No. 1 dry	9c
" " in oil	11c
" French (Paris)	11 c
" " in oil	12 c

Oils.

Linseed Raw	₩ gal. casks, 78c.	odi 80c
" Boiled	" 81c.	" 85c
" Bleached Winter		
Sperm, Crude		" 1 60
" Winter unbleached		" 1 80
" Bleached		" 1 90
Seal, Extra Refined		"
Lard, Pure Winter		" 1 15
" Spring		" 1 10
Cotton Seed, Crude		" 60c
" Southern Yellow		" 65c
" White		"
Neatsfoot, Winter		70c @ $1 10
Natural Lubricating		38c @ 40c

Sundries.

Asphaltum					8c
Benzine				₩ gal.	16c
Chalk					1½c
" Block					
Dryer, Patent, Am'n	asst'd cans, 10½c.;	kegs	9c
" " English	" 11c.;	"	9c
Flocks					8c
Frostings					8c
Glue, White					37c @ 47c
" Sheet					20c
Glaziers' Points, Zinc					9c
Gum, Copal					36c
" Damar					25c
" Shellac, English					35c
" " dark					75c
Litharge					10c
Pumice Stone, selected Lumps					4 @ 6c
" powdered					4c
Putty in bladders					3½c
" in bulk					3c
Rotton Stone, soft, English					8c
Spirits Turpentine					39c
Whiting, Spanish					1c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	
6 x 8 to 10 x 15	$10 25	$9 25	$8 75	$8 00
11 x 14 to 16 x 24	12 00	11 00	10 00	9 50
18 x 22 to 20 x 30	15 00	13 50	12 00	10 50
15 x 36 to 24 x 30	17 50	15 25	12 50	
26 x 24 to 24 x 36	18 25	16 00	13 25	
26 x 36 to 26 x 44	20 00	18 00	14 50	
28 x 46 to 30 x 50	21 00	19 00	15 25	
30 x 52 to 30 x 54	22 50	20 25	16 25	
30 x 56 to 34 x 56	24 50	21 75	19 00	
34 x 58 to 34 x 60	26 00	24 50	21 50	
36 x 60 to 40 x 60	30 50	27 00	24 50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16 50	$13 00	$14 00	$13 00
11 x 14 to 16 x 24	19 25	17 25	16 00	15 25
18 x 22 to 20 x 30	24 00	21 75

New York Wholesale Prices, February 18, 1875.

HARDWARE.

Anvils.
Solid Cast Steel.....₱ lb 14c
Wright's.....₱ lb gold 11½c; over 250 lbs 12c, gold
Arrington's Mouse Hole.....gold 11c
Wilkinson's.....₱ lb gold 11c
Eagle Anvils.....₱ lb 8c

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union, Skeleton Paring, Coring and Slicing.....$7 @ 9 ₱ doz
Turn Table, old style.....$6·75 dis 10 %
Bay state, Paring, Coring and Slicing.....$15 00 dis 10 %
Cliff ax Slicer.....8 00

Augers and Bits.
Douglass, Ives, Beecher (French, Swift & Co), Griswold, Noble.....1st quality.....dis 40&5 %
Challenge.....dis 40&10 %
Snell Mfg. Co.....dis 22½ @ 25 %
Russell Jennings.....dis 10 %
Lewis' Single Twist Bits.....dis 30 %
Andrews' Bits.....dis 25 %
Cook's Bits.....dis 10&10 %
" Augers.....dis 50 %
Expansive Bits, Clark's.....$18 @ $26—dis 15 %
" " Ives'.....$20 @ $30—dis 30 %
" " Blake's.....$20—dis 25&10&10 %
Hollow Augers, Douglass'.....dis 25&10 %
" " Ives'.....dis 25&10 %
" " French, Swift & Co.....dis 25&10 %
" " Bonney's Adjustable.....₱ doz $48—dis 25 %
" " Stearns'.....₱ doz $45—dis 25 %
" " Ives' Expansive.....$4·50—dis 40 %
" " Cushman's Expansive.....dis 20 %
Gimlet Bits—Screw, $7·50; no screw, $9.....dis 20&10 %
Double Cut Gimlet Bits, Shepardson's.....dis 20 %
" " Hartwell's.....dis 50 %
" " Douglass'.....dis 20&10 %
" " Ives'.....dis 25 %
" " Ladd's.....dis 50&10 %
Griswold's Patent.....dis 20 %
Morse's Bit Stock Drills.....dis 20 %
L'Hommedieu's Ship Augers.....dis 15 %
Watrous Ship Augers.....dis 15 %
Vaughan's Post Hole—
6 in. $23 60; 9 in. $25 per doz.....dis 20 %

Awls and Tools.
Aiken's.....dis 25 %
Nos. 42 and 43.....dis 35&10 %
Clark's.....dis 30&10 %
Stanley's Excelsior.....$13 50—dis 20&10 %

Axes.
Brook's.....per doz $12 00 @ 14 00 net
Blood's.....per doz $12 00 @ 13 00
Hunt's.....₱ doz $12 50 @ 14 00
Collins'.....₱ doz 11 00 @ 15 50 net @ dis 5 %
H. Clark's (J. C. W. & Co.) Bronzed.....₱ doz $10 00 net
Hurd's.....₱ doz 11 50 @ 12 50
Simmons'.....₱ doz 11 00 @ 11 50
Morris'.....₱ doz 12 50 @ 13 50
Red Jacket.....₱ doz 12 00 @ 12 50
Mann's.....₱ doz 11 50 @ 12 00
" Double Bitted.....₱ doz 21 50 @ 22 00
Underhill's.....₱ doz 12 00 @ 13 00
" Crown.....₱ doz 12 50 @ 13 50
John Leverett's.....₱ doz 14 50 @ 15 50
Ten Eyck.....₱ doz $11 00 @ 12 50 net
Balances.....dis 40 %

Bands.
Plated.....new list dis 50&5 %
Iron (dis.).....new list dis 25&5 %
Brass (Plated list).....new list dis 50, 10&5 %
Oroide.....new list dis 50&5 %

Bells.
Hand, Light Brass.....dis 65&5&10 %
Extra Heavy.....dis 40&10 %
White Metal.....dis 50&10 %
Silver Chime.....dis 15&10 %
Swiss.....dis 25 %
Globe.....dis 15&10 %
Gong, Abbe's.....dis 15&10 %
Yankee.....dis 30&10 %
Barton's.....dis 33½ %
Crank, Taylor's.....dis 50 %
Brook's.....dis 10 %
Cone's.....dis 50&10 %
Connell's.....dis 50&10&10 %
Lever, Sargent's.....dis 50&10&10 %
Taylor's.....dis 25 %
Hart, Bliven & Mead Mfg. Co.....dis 50&10 %
Pull, " " " " .....dis 50&10 %
Brook's.....dis 50 %
Western.....dis 25 %
Cow—Common Wrought.....dis 20&10 %
Western.....dis 20&10 %
" Sargent's.....dis 50&10&10 %
Kentucky "Star".....dis 20&10 %
" " Sargent's.....dis 50&10&10 %
Dodge's Genuine Kentucky.....dis 35 %
Yaw's Genuine.....dis 30 %
Texas.....dis 35 %
Call.....dis 15 %

Bellows.
Blacksmiths'.....dis 20 %
Moulders'.....dis 15 %
Hand bellows.....dis 10 %

Blind Adjusters.—Domestic.....₱ doz $3—dis 20 %

Blind Fasteners.
Mackrell's.....dis 30 %
Van Sand's, No. 200, $14·00; No. 3705, $10 75.....net
Washburn's Patent.....₱ gross 14 00
Merriman's.....new list net

Blind Staples.
Boardman's Patent, ½ in. and larger.....₱ lb 37 c
" ⅜ in. " 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list.....dis 30 %
Burr's.....dis 10 %
Stanley Rule and Level Co.....dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c.....dis 60&10 %
Cast Iron Chain.....dis 60&10&10 %
Wrought Iron Barrel.....dis 50, 10&10 %
" " Square.....dis 50, 10&10 %
" " Shutter.....dis 60&10 %
Wrought Iron Plush, Stanley's.....dis 10&10 %
" " " Sargeant's.....dis 50&10&10 %
Carriage and Tire, Common.....dis 75&10&5 %
" " Norway Iron.....dis 50 & 10 %
Star, Philadelphia.....dis 50 @ 50&10 %
Eagle Philadelphia.....dis 50 @ 50&10 %
Carriage and Tire, R. B. & W.....old list dis 50 %
Plow, R. B. & W.....dis 30 %
Stove, R. B. & W.....dis 20 %
" Shelton Co. Shaved Heads.....dis 20 %
Union Nut Co., old list.....dis 60 %
" " Stove.....dis 15 %
" " Machine.....dis 45&10 %

Borax......10c. ₱ lb

Boring Machines.
Kellogg's.....dis 15 %
Snell Mfg. Co., Rice's Patent.....dis 20 %
" " Regular.....dis 20 %
Douglas Mfg. Co.....dis 20&10 %
Morticing Machines each.....$18 00

Bow Pins.
Union Nut Co.....new list dis 50&10&5 %
Hotchkiss'.....dis 50 @ 55 %
Humason, Beckley & Co.'s.....dis 50&10&5 %
Sargent & Co.'s.....dis 50&10&10 %

Braces.
Barnes's Patent.....dis 40&5 %
Q. S. Backus.....dis 40&10 %
Wilson Mfg. Co.....dis 10 %
Spofford's Patent.....dis 50&10 %
Nobie's Patent.....dis 40&5 %
Ives' Novelty.....dis 40&5 %
" Hamden.....dis 15&10 %
Common Bell.....dis 15&10 %

Bracelets.—Shelf.....dis 60&10 @ 65&10 %

Bright Wire Goods.....dis 65&10&10 %

Butt Rings.—Union Nut Co., new list.....dis 50&10&5 %
Sargent's.....dis 60&10 %

Bung Hole Borers.
Common and Ring.....dis 25 %
Ives' Tap Borers.....dis 10&10 @ 25 %
Enterprise Mfg. Co.....dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co.....dis 20&10 %
Bradley's.....dis 25 %
Beatty's.....dis 20 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co.....dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$34·25	$39·75	$43·25	$48·50	$54·00

Butts.
Wrought Brass.....dis 30 %
Cast Brass.....dis 20 %
Cast Flat Joint, Narrow.....dis 40 @ 50 %
" " Broad.....dis 50&10 %
Cast Loose Joint, Narrow.....dis 55&10 %
" " Broad.....dis 60&10 %
" " Mayer.....dis 50 %
" " Parliament.....dis 50 %
Drilled Wire Jointed—
Fast Joint, Narrow, High List.....dis 50&10 %
" Broad.....dis 50&10 %
Loose Joint, Narrow and Broad.....dis 60&10 %
Loose Pin.....dis 35 @ 60 %
Wrought Fast Joint, Narrow.....dis 30&10 %
Wrought Broad.....dis 35&10 %
" Loose Joint.....dis 35&10 %
Wrought Table and Back Flaps.....dis 3 &10 %
Lull & Porter's Blind Butts.....dis 40 %
Palmer Blind Butts.....dis 30&10 %
Nicholson Blind Butts.....dis 40&10 %
Parker's Blind Butts.....dis 55&10 %
Huffer's Blind Butts.....dis 33½&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5.....dis 5&10 %
" " " " No. 40 and 50.....dis 50&2 %
" " " " No. 20.....dis 60&10 %
" Mortise " " 2, 4, 4½, 6, 8, 10.....dis 40 %
Seymour's.....dis 50&10 %
Sheard's.....dis 5 &5 %
Garretson's—No. 1, dis 5&10 %; Nos. 2 and 3 dis 5&5 %
The American Spiral Spring Butt Co.....dis 30 %
Standard.....dis 5&5 %

Caps—Percussion, per 1000.
G. D.....37 @ 40c
Ely's E. B.....1-4s, 55c.; 1-10s, 60c., gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·32½c., gold
Colt's.....1-10s 80c gold

Carpet Sweepers.
Cotton.....each $2 75 net
Welcome.....each 2 75 net

Cartridges.—Metallic.....dis 50&10 %

Carus.—Horse and Curry.....dis 30&10 %
Cotton.....dis 10&10 %
Wool.....dis 15&10 %

Carpet Stretchers.
P. S. & W.....per doz $2 00; dis 40&5 %
Sargent's.....per doz $2·88—dis 50&10&10 %

Casters.
Bed.....dis 30&10 %
Plate and Shallow Socket.....dis 40&10 %
Deep Socket.....dis 33⅓ %

Cattle Leaders......new list dis 60&10 %

Chain.
English Coil.....net

₱ lb	⅛	3-16	¼	5-16	⅜	7-16	½
	12¼	9¼	8¼	7¼	7½	7¼c	

Trace, 6½-10-2.....by the cask, ₱ pair, gold 57c
Trace, 7-10-2.....by the cask, ₱ pair, gold, 62c
German Halter Chain.....dis 25 %
German Coil.....dis 25 %
Galvanized Pump Chain.....₱ lb 13c
Jack Chain, Iron.....dis 50 %
" Brass.....dis 40 %

Chalk.
White.....₱ gross, 63c net
Red.....₱ gross, 90c net
Blue.....₱ gross, $1·17 net
White Crayons.....₱ gross, 16½c net

Chisels.
Socket Framing, Douglass.....dis 60&10 %
" " Crossman.....dis 50&5&10 %
" " Hart Mfg. Co.....dis 60&10 %
" " Merrill.....dis 60&10 %
" Firmers, Douglass.....dis 50&10&10 %
" " Crossman.....dis 50&5&10 %
" " Hart Mfg. Co.....dis 60&5 %
" " Merrill.....dis 60 %
Socket Corner.....dis 60&10 %
Tanged Firmers.....dis 45&10 %
Butcher's.....$5·50 to £ gold
Newbould's.....$5·50 to £ gold
Spear & Jackson's.....$5·50 to £ gold

Clamps.
Cabinet.....dis 60&10 %
Judd's.....dis 45&10 %
Lambert's.....dis 20 %
Providence Tool Co.....dis 10 %

Clips, Axle.
Norway or Best.....dis 30 %
Superior.....dis 50 %
"Star," Superior Philadelphia.....dis 45&5 %

Coal Shovels.
Iron Handled.....₱ doz, $ 85 @ 1 25
Wooden Handled.....₱ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co.....dis 15 & 25 %

	14	15	16	17	18
Japanned	$6·00	6·35	6·75	7·50	₱ 00 per doz.
Galvanized	9·50	10·00	10·75	11·50	12·50 "

Morning Glory Funnel Hods—

	No. 15	16	17	
Japanned	$9·00	10·50	12·00	per doz
Galvanized	13·00	14·50	16·00	"

Sidney Shepard & Co.'s new list.....dis 10 %

Cockeves......1¼ in., 34c.; 1¾ in., 38c.; 1¾ in., 43c. net

Cocks.
Brass Racking.....dis 25 %
Lock and Globe.....dis 25 %
Lever Bibbs.....dis 25 %

Coffee Mills.
Board and Box.....dis 15 %
Increase Wilson's.....dis 15 %
Selsor's Pat.....$9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.).....dis 20 %
French Steel.....dis 15 %
The Swift.....dis 25 %

Compasses and Dividers.
Benzie & Call Co.'s.....dis 35&10 %
Cook's.....dis 15 %
Excelsior.....dis 30 %
Peck Stow & Wilcox.....dis 25 %

Coopers' Tools.
Bradley's.....dis 15 @ 20 %
Chas. E. Little.....dis 20 @ 25 %
Swan & Brombacher.....dis 15 @ 20 %

Corkscrews......dis 25 %

Corn Knives and Cutters.
Bradley's.....dis 10 %

Crow Bars.
Cast Steel.....₱ lb 11c. net
Iron, steel points.....₱ lb 6c

Crucibles.—Gautier & Co.....₱ No. 5½c

Curling Irons, &c.
⅛, ⅜, ½ in., $1·80, $2·00, $2·40.....dis 10 %
Curling Tongs.....₱ doz $6 50—dis 15 %
Pinching Irons.....₱ doz 7 50—dis 20 %

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass.....dis 20&10 %
Fitch's (List of No. 24), $1).....dis 20&10 %
Rubber.....₱ doz, $9·00—dis 15 %
Lawrence Curry Comb Co.....new list, Jan., 18 5, dis 25 %

Curtain Pins.—Silvered Glass.....old list dis 54½ %

Cutlery.
American Table { Meriden { New list Jan. '75, dis 25 %
American Pocket } Cutlery Co } .....dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co.....dis 20&10 %

Dippers.
Britannia.....per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain.....per doz $3·25—dis 20 %
" Rimmed.....per doz 3·75—dis 20 %

Dog Collars.
Embossed Gilt.....dis 20 %
Leather.....dis 20 %
Brass.....dis 25 %

Door Springs.
Gray's.....$7·50 ₱ doz—dis 50&10 %
Torrey's Patent.....$7·50 ₱ doz—dis 5 %
Johnson's.....per doz $3 00 @ 4 00
Palmer's Japanned No. 6.....₱ doz $5·00
" " Coppered " .....6·00 } dis 20 %
" " Silvered " .....8·00 }
Challenge.—
Japanned.....₱ doz $4 00 @ 6 25—dis 40 %
Gem.—No. 1 large, Japanned.....per doz $4·00
No. 2 medium.....per doz 3·50 } dis 10 %
No. 3 small.....per doz 3·00
Barker's Concealed.....dis 12½ %

Drawing Knives.
Crossman's No. 1.....dis 50&5&10 %
Douglass.....dis 60&10 %
Hart Mfg. Co., No. 1.....dis 60 %
Merrill.....dis 60&10 %
Bradley's.....dis 25 %
Adjustable Handle.....dis 15 %

Drills.
Blacksmiths'.....each $2 60 net
Breast, P. S. & W.....dis 15&10 %
" Miller's Falls.....dis 25 %
" Aiken's.....$2·50; 4·00, dis 40 %
" Hotchkiss'.....dis 10 %
Ratchet, Merrill's.....dis 20 %
" Ingersoll's.....dis 25 %
" Whitney's.....dis 20 %
" Moore's Triple Action.....dis 20 %

Drill Chucks.—The Danbury.....each 10·00, dis 20 %
Beach Patent (Morse).....dis 15 %

Egg Beaters.

Monroe's	8 in.	10 in.
	Per doz $3·00	9·00

.....dis 10 %
Dover.....₱ doz net $6·00
National.....₱ doz $4·50—dis 20 %
Peerless.....₱ doz $4·00—dis 10 %

Emery.
Genuine Chester—Regular Nos.....₱ lb 7c } dis 10 %
" Flour and FF.....₱ lb 4c }
Washington Mills—Regular Nos.....₱ lb 8c
" Flour.....₱ lb 5c

Enameled and Tinned Ware.
Kettles.....dis 30 %
Sauce Pans.....dis 25 %
Glue Kettles.....dis 20 %
Tinned Saucepans.....dis 25 %

Escutcheons.
Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 60&10 %
Wood.....dis 25 %

Faucets.
Fenn's.....dis 50 %
" Cork Stops.....dis 40 %
Star.....dis 55&10 %
Frary's Patent Petroleum.....dis 15&10 %
Taylor's Pattern " .....dis 20&10 %
Wood and Metallic.....dis 40 %
Wood, Cork Lined.....dis 60&10 %
Enterprise Mfg. Co., Self-Measuring.....dis 20 %

Feltoe Plates.....₱ lb 14c; dis 10 %

Files.
American File Co.....$5 00 to £ currency—dis 10 %
Nicholson.....new list, Jan. 1, 1875, net
Hartford File Co.....$5 50 to £ currency—dis 10 %
" Western".....5 00 to £ net
Rothery's.....$5 to £ currency
" " Horse Rasps.....5 50 to £ gold
Stubs'.....8 50 @ 9 00 to £ gold
Butcher's.....5 25 to £ gold
Walter Spencer & Co.'s "Diamond".....5 25 to £ gold
Spear & Jackson's.....5 00 to £ gold
Jowitt's.....5 25 to £ gold
Newbould's.....5 25 to £ gold
W. K. & C. Peace's "Imperial".....5 25 to £ gold
R. Ibbotson.....5 00 to £ gold
Fisher's.....4 75 to £ gold
Goodlad's.....4 00 to £ gold
Moss & Gamble.....5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.).....5 00 to £ gold
" " Horse Rasps.....5 25 to £ gold
" Philo Sheffield," P. T. Co.....5 00 to £ gold
Limet & Co. (French).....4 50 @ 5 00 to £ gold

Fluting Machines.
Mrs. Coles.....5 in., $6·00; 7 in., $7·00
" " Pony, 4 in., $4·75; 5 in., $5 6 in., 5·50; 7 in., $6
Knox, with 4-inch Rolls.....5 75 each } dis 20 %
" " 6 " " .....7 00 each }
" " 8 " " .....9 00 each }
O. K.....6 50 each net
Peerless, 4-inch Rolls.....4 00 each net
" 5 " " .....4 75 each net
Excelsior, No. 1.....4 75 each net
" No. 2.....6 50 each net
Diamond.....7 50 each net
Climax 7-inch Rolls.....8 00 each net
" 4½ " .....6 50 each net
Empire.....4 00 each net
Eureka, No. 1, 7-inch Roll.....8 00 each net
" No. 2, 5-inch Roll.....6 00 each net
K. F. M., 4½-inch Roll.....3 50 each dis 15 %
" 6-inch Roll.....6 00 each dis 15 %
Myers Fashion Fluter, 4½ inch Rolls.....3 00 each net
" Convex Brass Fluter, Sad Iron attachment..$1·75
Domestic Fluter.....$1·75 each net
Fairy, Self-Heater.....00 each net
Genova Hand Fluter.....$15 00 per doz net
Champion, 6 inch rolls.....$6 00 each dis 10 %
" 4 inch rolls.....$5 00 each dis 10 %

Fluting Scissors......dis 25&10 %

Forges.
"Empire" (W. P. Kellogg & Co.).....dis 30 %

Forks.
Hay, Manure & Spading.....dis 30 %
Plated A 1.....dis 50 %

Fry Pans.
Burnished, P. S. & W., new list.....dis 45 %

₱ doz.	$3·00	3·75	4·25	4·75	5·25	6·00	7·00	8·00	9·00
No.	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished.....dis 35 %

₱ doz.	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00
No.	1	2	3		5	6	7	8

Gas Stoves.
Tiffs & Howard.....dis 20 %

Gauges.
Marking.....dis 45&10 %
Wire.....dis 10 %

Gimlets.
Nail and Spike.....dis 25&10 %
Double Cut, Shepardson's.....dis 20 %
" " Ives'.....dis 25 %
" " Douglass'.....dis 20&10 %

Grind Stones.—J. F. Green & Bro.....dis 20 %

Grind Stone Fixtures
Sargent's Patent.....dis 65&10 %
Reading Hardware Co.....dis 66⅔&7½ %
Hart Mfg. Co.'s.....dis 60&5&10 %

Hammers.
Emmet Hammer Co.'s Handled.....dis 25 %
" " Sledge & Stone..₱ lb 25 @ 50c net
Humason & Beckley Mfg. Co.....dis 16⅔&10 %

Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair.....dis 25 %
" Leg Irons $5 50 per pair.....
Providence Tool Co.'s Hand Cuffs $15 per doz } dis 10 %
" " Leg Irons 25 " }

Handles.
Wrought Chest.....dis 60&10 %
Surface Chest.....dis 65&10&10 %
Flush Chest.....dis 60&10&10 %
Lifting.....dis 60&10 %
Coffin.....dis 50&10 @ 60&10 %
Saw and Plane.....dis 20&10 %
Hammer and Hatchet.....dis 10 %
Greensboro', Axe, Pick, Hammer, &c.....dis 10 %
North Carolina Handle Co.....dis 10 %
Woolworth Axe, Pick and Sledge.....dis 10 %
Brad Awl.....per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td 5 25—dis 20&10 %
" " " large 6 50—dis 20&10 %
Apple " " ass'td 6 00—dis 20&10 %
" " " large 7 50—dis 20&10 %
Socket " " ass'td 3 50—dis 20&10 %
" Framing " " 7 00—dis 20&10 %
File " " 4 00—dis 20&10 %
" " " 6 50—dis 20&10 %
Auger " " 8 00—dis 20&10 %
" " large 8 00—dis 20&10 %
Patent Auger, Ives'.....dis 25&10 %
" " Douglass'.....per set $1 25—dis 10 %
" " Swan's.....per set $1 00—dis 10&10 %

Hangers.
Barn Door.....dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.).....dis 30 %
Novelty.....dis 30 %

Harness Snaps.
Henshaw's.....dis 25&10 %
Judd's.....dis 40 %
Fitch's (Bristol).....dis 30 %
Hotchkiss'.....dis 10 %
Andrews'.....dis 25 %
Sargent's.....dis 50&10 %
New York Wire.....dis 2 &20 %

Hatchets.—Isaiah Blood.....dis 10 %

Shingling, Nos.	1 2 3	₱ doz	$7 50	8 00 8 50
Claw,	1 2 3	₱ doz	8 50	9 00 9 50
Lathing,	1 2 3	₱ doz	7 50	8 00 8 50

Hunt's.....dis 10 %

Shingling, Nos.	1 2 3	₱ doz	$7 25	8 00 8 75
Claw,	1 2 3	₱ doz	7 15	8 50 9 25
Lathing,	1 2 3	₱ doz	7 50	8 25 9 00

Hurd's.....dis 25 %

Shingling, Nos.	1 2 3	₱ doz	$8 00	8 50 9 00
Claw,	1 2 3	₱ doz	9 00	9 50 10 00
Lathing,	1 2 3	₱ doz	8 00	8 50 9 00

Newark's Edge Tool Co.'s.....dis 25 %

Shingling, Nos.	1 2 3	₱ doz	$6 50	7 00 7 50
Claw,	1 2 3	₱ doz	7 25	7 75 8 25
Lathing,	1 2 3	₱ doz	6 50	7 00 7 50

Yerkes & Plumb.....dis 12½ %

Shingling, Nos.	1 2 3	₱ doz	$7 00	7 50 8 00
Claw,	1 2 3	₱ doz	7 50	8 00 8 50
Lathing,	1 2 3	₱ doz	7 00	7 50 8 00

Simmon's.....dis 15 %

Shingling, Nos.	0 1 2 3	₱ doz	$7 50	8 00 8 50 9 00
Claw,	1 2 3	₱ doz	9 00	9 50 10 00
Lathing,	1 2 3	₱ doz	8 00	8 50 9 00
Broad,	1 2 3	₱ doz	9 00	10 00 12 00
"	4 5 6	₱ doz	14 00	16 00 18 00
"	7 8	₱ doz	20 00	22 00

Elephant.....dis 25 %

Shingling, Nos.	1 2 3	₱ doz	$6 00	8 50 9 00
Claw,	1 2 3	₱ doz	9 00	9 50 10 00
Lathing,	1 2 3	₱ doz	8 00	8 50 9 00

J. P. Verree & Co.....dis 5 %

Shingling, Nos.	1 2 3	₱ doz	$7 00	7 50 8 00
Claw,	1 2 3	₱ doz	7 50	8 00 8 50
Lathing,	1 2 3	₱ doz	7 00	7 50 8 00

Underhill's.....dis 10 %

Shingling, Nos.	1 2 3	₱ doz	7 25	8 00 8 75
Claw,	1 2 3	₱ doz	7 75	8 50 9 25
Lathing,	1 2 3	₱ doz	12 00	11 00 13 00

Hinges.
Gate, Western.....₱ doz $6·25—dis 60&10 %
" N. E.....₱ doz 11·25—dis 6 &10&10 %
" N. Y. State.....₱ doz 7·20—dis 60&10 %
Rolled Plate.....dis 65&10 %
" Raised.....dis 65&10 %
Wrought Strap and T.....dis 35&10 @ 40&10 %
Providence Plate. { 6 and 8 in. 11c ₱ lb { .... dis 25 @ 30 %
{ over 8 in. 9½c ₱ lb {
Screw Hook and Strap.....{ 8, 10, 14 in. 7c } ....net
{ 14 to 36 in. 6c }
Heavy Welded Hook.....{ 8 to 12 in., 6½c } ....net
{ 14 in. & up, 6c }
Screw Hook and Eye.....{ ⅝ to 1 in., 8½ } ....net
{ ⅝ in. 9½ }
{ ½ in. 11½ }
Screw Hook and Eye, Sargent's—

	⅜ inch.	½	⅝	¾ inch.
Per doz pairs	$4·75	7·25	10·25	—dis 65&10&10 %

Hoes.
Solid Shank, C. S.....₱ doz $8 00—dis 30 %
Socket.....₱ doz 9 00—dis 30 %
Riveted Eye.....₱ doz 5 00—dis 30 %
Grub.....dis 25 %
Planters.....net @ 10 %
Scovill.....add 33⅓ %
Scovill Pattern.....net @ 5 %
Lane's C. E. Crescent, American Pattern.....add 5 %
" " Scovill Pattern.....add 15 %

Hooks.
Bird Cage.....dis 60&10 @ 70&10 %
Cotton.....dis 50 %
Belt.....dis 50&10 %
Bench—Skinner's.....per doz $8 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ₱ doz.....dis 10 %
Bench—Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" —McGill's.....$8 00 per doz, dis 10 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling } Hart's list.....dis 60&10&10 %
Sargent's list.....dis 6 &5&10 %
Reading list.....dis 33⅓&10 %
Wrought Staples and Hooks and Staples.....dis 70&10 %
Wire Screw Hooks and Eyes.....dis 65&10&10 %
Grass.....dis 2 / %
Whitmetree—Patent.....dis 30 %
Hooks and Eyes—Malleable Iron.....dis 60&10&10 %
" " Brass.....dis 60&10&10 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Aussable Horse Nail Co.

No.	5	6	7	8	9	10
Aussable	30c	27c	25c	24c	23c	22c
Polished and Polished	31c	28c	26c	25c	24c	23c
Pointed and Blued	32c	29c	27c	26c	25c	24c

In lots of 1000 lbs., 5% discount.
Brundage.

No.	5	6	7	8	9	10
	28c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	10
	22c	20c	20c	20c	20c

In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9
	31c	28c	26c	25c	24c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.	5	6	7	8	9	10
	29c	26c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).

No.	5	6	7	8	9	10
Patent Finish	23	21	23	22	21	20
Extra	30	27	25	24	23	22

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.

No.	5	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c	
U B. "	29c	27c	26c	25c	24c	

In lots of 1000 lbs., dis 5 %.
Star Brand.....₱ lb 16c
Morgan.....14c

Horse Shoes.
Burden.....₱ keg, $5 85
R. I. Horse Shoe Co., Perkins Pattern.....₱ keg, 5 85
" " R. I. Pattern.....₱ keg, 6 35
Mule Shoes.....₱ keg, 6 85

Kettles.
Brass.....₱ lb 45c net
Enameled.....dis 30 %

Knives.
Ames' Butcher Knives.....dis 20 %
" Shoe " .....dis 15 %
" Bread " .....₱ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's".....dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives.....dis 25 %

Knobs.
Carriage.....dis 60&10 %
Base—Common.....net
" Plush Tip.....dis 10 %
" Elastic End, No. 8.....dis 30&10 %
Door, Mineral.....₱ doz $2·25
" Por. Jap'd.....₱ doz 3·00 } dis 45&5&2 %
" " Plated.....₱ doz 7·0 }
" " Por.....₱ doz 7·50

Ladles.
Melting, Hart's.....dis 55&10 %
" Sargent's.....dis 5·&10 %
" Reading.....dis 15&10 %

Lanterns.
Tubular.....No. 0, $12 50—dis 15 %
Peerless.....No. 5, per doz $11·75—dis 10&10 %
Brady's Patent.....dis 10 & 10 %
Etna.....dis 10 & 10 %
Yankee.....dis 10 & 10 %
De Beque.....dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch.....each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined.....per doz $6 30, dis 10 %

Lines.
Linen Fish.....dis 10&10 %
Cotton Chalk.....dis 40 %
Silver Lake Chalk.....dis 10&10 %
Mason's.....dis 10&10 %
Galvanized Wire Clothes.....$1 per 100 ft. dis 33⅓ %

Locks and Latches.
Cabinet—Gaylord.....dis 25 %
" Eagle.....dis 32 %
Trunk " .....new list dis 25 %
Langstroth & Crane, Round Key.....dis 40 %
" " Flat Key.....dis 33⅓ %
Barnes & Deitz.....dis 25 %
Continental.....dis 15 %
Shepardson's.....dis 20 %
American Lock Co.....dis 33⅓ %
Plate.....dis 25 %
Yale Lock Co.....dis 40 %
Sargent & Greenleaf.....dis 20 %
Trenton
Brunford
Norwich
Russell & Erwin
Norwalk
Nashua
Mallory, Wheeler & Co.
P. & F. Corbin
Parker & Whipple
Jacobus & Nimick Mfg. Co.
} Rev'd list of Jan. '75 dis 45&5 %. 2 % extra for cash.
Padlocks, Russell & Erwin.....} List of Jan., '75. dis 50&5&2
" Mallory, Wheeler & Co.....}
" Wm. Wilcox & Co.....dis 5 %
" Romer's.....dis 20 %
" Vulcan Hardware Co.....dis 20 %
" New York Lock Co.....dis 20 %
" J. H. McWilliams.....dis 5 %
" Scandinavian Jail.....dis 10 %
" Barnes & Deitz.....dis 25 %
" D. K. Miller Lock Co.....dis 30 %

Mallets.
Hickory and Lignumvitæ.....dis 20 %

Meat Cutters.
Dixon's (P. S. & W.).....dis 10 %

No.	1	2	3	4
₱ doz.	$14 00	$17 00	$19 00	$30 00

Hales'.....dis 25 %

No.	11	12	13
₱ doz.	$27 00	$35 00	$42 00

Miles Challenge.....dis 20 %

No.	1	2	3
₱ doz.	$22·00	$30·00	$40 00

Perry's Champion (P. S. & W.).....dis 10 %

No.	200	300	400
₱ doz.	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.).....dis 10 %

No.	100	150

Tapes, Measuring.
American Flask and Cap Co.....dis 20 %
Eddy's.....dis 20 %
Tea Trays.
American Tea Tray Co.....dis 15 %
Thermometers.
Tin Case.....dis 50&10 %
Toe Calks.
.....₩ ℔ 13c net
Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 20 %
Morse's.....₩ doz $12·00—dis 10&10 %
Wood Bottom.....per doz $12—dis 25&10 %
All Iron.....per doz $19·50—dis 25&10 %
Tinners' Tools and Machines.
P. S. & W.....list net
Traps.
Newhouse.....dis 20 %
Peck, Stow & Wilcox.....dis 30 %
Blake's Patent.....new list dis 25 %
Mouse, Wood Choker.....₩ doz holes, 15 @ 16c
" Patent Knocker Union Nut Co.).....₩ doz holes 16 @ 18c net
" Round, Wire.....₩ doz $1 60 to 2 00 net
" Square, " .....₩ doz 2 00 to 2 50 net
" Cage, " .....₩ doz 2 50, dis 10 %
Trowels.
Lothrop's Brick and Plastering.....dis 10 %
Disston's Plastering.....dis 12½ %
Disston's Brick.....dis 12½ %
Rose's Brick.....dis 5 %
Brades' Brick.....gold. dis 10 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 25 %
Triers.
Butter and Cheese.....dis 25 %
Ventilators (Window).
Nickel and Gilt.....per dozen $16·00 @ 18·00
Vises.
Trenton Vises, Solid Box.
30 to 160 lbs.....16c
160 and over.....19c
Peter Wright's.....₩ ℔ 15½c. gold
Wilson's Solid Box.....dis 15 %
99 to 160 lbs.....18c
160 and upward.....22c
Wilson's Parallel.....dis 30 %
Sargent's " .....dis 30&10 %
Hackus & Union, Parallel.....dis 25 %
Buffalo, Parallel.....new list dis 25 %
Fisher & Norris' Double Screw Parallel.....dis 15&10 %
Trenton Parallel.....dis 15 %
Merrill's Parallel.....dis 15 %
Parker's.....dis 20 %
Stephens' Parallel.....dis 15 @ 20 %
Bonney's Saw Filers.....per doz $20—dis 25 %
Stearn's Saw Filers.....per doz $20—dis 25 %
Wheel Barrows.
Canal (Pugsley & Chapman).....new list dis 10 %
Coal, Garden and Stone (Pugsley & Chapman).....dis 25
Well Wheels.
Revised list.....dis 60&10 %
Wire.
Brass and Copper.....dis 10 %
Bright and Annealed.....Nos. 0 @ 18 dis 35 @ 47½ %
" " " " 19 @ 26 dis 55 @ 57½ %
" " " " 27 @ 36 dis 60 @ 62½ %
Coppered.....0 @ 18 dis 40 @ 42½ %
Galvanized, Nos. 2 to 6.....₩ ℔ 8½ @ 9c net
Galvanized, Nos. 7 to 18.....market list dis 10 @ 15 %
Tinned.....dis 25 @ 30 %
Cast Steel.....dis 15 @ 20 %
Tinned Broom Wire.....dis 30 @ 35 %
Galvanized Telegraph, Nos. 6 and 9.....₩ ℔ 9c @ 9½c
Galvanized Telegraph, Nos. 10 and 11.....₩ ℔ 10c @ 10½c
" " 12 " .....₩ ℔ 10½c @ 11c
Annealed Fence, Nos. 8 and 9.....dis 45 @ 50 %
" Grape, " 10 to 14.....dis 45 @ 50 %
Fence Staples.....₩ ℔ 7½ @ 8 %
Scuns' Steel Wire.....$7 00 to £ gold
Judd's Picture Wire.....dis 50
Wrenches.
American Adjustable.....dis 45 %
Baxter's Adjustable "S".....dis 20 %
" Diagonal.....dis 20 %
Collins & Co.'s.....dis 45 %
Coes' Genuine.....dis 40&5 %
" Pattern (Wrought).....dis 50&10 %
" " (Malleable).....dis 60&10 %
Lindsay's Patent.....dis 25 %
Taft's Pattern.....dis 20 %
Davis 'atent Duplex.....new list dis 25 %
Bemis & Call's Patent Combination.....dis 20&5 %
" " Merrick's Pattern.....dis 25&2½ %
" " Brigg's Patent.....dis 15&10 %
Aiken's Pocket.....per doz $10·00—dis 4&10 %
Wringers.
Providence.....₩ doz $64 00
Reliance.....₩ doz 61 00
Universal—Extra.....₩ doz 64 00
Novelty.....₩ doz 64 00
Sherman.....₩ doz 64 00
Eureka (Friction).....₩ doz 60 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 5 %.
COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½	1	2	3	4
Inch	4½	5 5-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts	6	8	10	12	
Inch	8¾	9¼	9¾	10 9-16	
Per gross	$6·50	8·00	8·50	11·50	

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11¼	12¾	13¾
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11¼	11¾	12¼	12¾	13¼
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	4·50	5·50	5·50	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·50	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3¾	3¾	4¼	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2¾	3	3¾	4	4¾	inches.
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7¾	8	8¾	9	9¾	10	10¾	11	11¾
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.

Sheet	¼	½	1
Per gross	$3·00	6·00	11·50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes	per gross, $8·00	11·50
With Tubes	" 10·50	14·00

Stamped Square Pans.

No.	¼
Per gross	$7·50
	14·50

Common Square Pans (One Sheet).

Per gross	$11·50

Milk Skimmers (Plain or Pierced).

Per gross	$4·00

Lettered Plates.

Inch	5½	6
Per gross	$3·25	4·00

Steamer Bottoms.

Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain, per gro.	$4·00	4·50	5·00	5·50	6·00	7·00
Jap'd or Burn'd	6·00	6·50	7·00	8·00	9·50	10·00

Coffee Boiler Lips.

	Small.	Large.
To Rivet, per gross,	$0·80	1·10
To Solder, "	1·25	

DEEP STAMPED AND RETINNNED WARE, dis 25 %

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	quarts.	2½ quarts.
Per doz	·90	1·15	1·50	1·85	2·50

Retinned Milk Pans.

Qts.	½	1	1½	2	3	4	5	6	8	10	12
₩ doz.	1·30	1·50	1·75	2·00	2·25	3·15	3·50	3·85	4·75	5·25	5·75

Dipper Bowls, Plain Stamped—

Plate	½	1	Quarts	1	2	2½
Per doz.	·60	·75	Per doz	1·00	1·25	1·75

Dipper Bowls, Retinned—

Plate	½	1	Quarts	1	2	2½
Per doz.	·75	·95	1·05	Per doz	1·40	1·75	2·25

Pans.

Dish Pans, Retinned Deep—							
Quarts	7	8	10	14	17	21	30
Per doz.	8·50	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE, dis 5 %.

Canisters, Common	Pound	½	1	2	3
	Per gross	$10·50	15·00	24·00	30·00
Canisters, Hinged	Pound	1	1½	2	3	4
	Per gross	$19·00	25·00	32·00	37·00	42·00
Canisters, Square	Pound	2	4	6	8	12	16
	Per doz	$3·00	4·25	5·00	5·75	8·00	9·00

Candlesticks, Japanned	No.	1	2
	Per gross	$8·00	7·00
Cake Boxes, Round	per nest,	$7·25	
Square	per nest,	4·25	
Chamber Pails, Japanned			
Size	2	3	4	5
---	---	---	---	---
Green, per doz	$8·00	9·00	11·00	13·00
Oak "	9·00	11·00	12·00	15·00

Dust Pans, Corrugated	per gross,	$22·00
Box Graters	per gross,	$9·75

Molasses Cups	Pint	½	1	2	4
	Per gross	$13·00	16·00	28 00	42·00

Lunch Boxes, per doz.....1 in $2·00; 8 in. $2 50
Pepper Boxes Japanned..₩ gross small, $8·00; large, $4·00
Toy Banks, House.....No. 1 2
Toy Banks, Goodie.....No. 1, $6·00, No. 2, 4·00 per gross
Toy Cups, Straight.....No. 1 2 3
Toy Cups, Flaring.....Per gross $5·75 2·25 2·75
Toy Pails, Covered.....No. 1, per gross $4·00
Toy Rattles.....per gross, $2·00
Trunks, Wire Handled.....per nest (5) $1·75
Spittoons, Tin.....per gross, $27

PLANISHED TIN WARE, dis 25 @ 30 %.

Planished Coffee Pots, Round.

Each	60	75	85	95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round.

Each	70	80	95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval.

Each	70	80	90	1·25	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

Planished Pepper Boxes, No. 1.....per doz., $1·52
Planished Flour Dredges, No. 3, ₩ 10; 4, 2·45 ₩ dozen.
Planished Round Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·00	1·10	1·20	1·40	1·60	2·00

Planished Oval Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·15	1·25	1·40	1·60	1·80	2·25

Planished Oval Chafing Dishes, Imperial Covers.

Inch	10	12	14	16	18	20	22	24
Each	$3·85	5·00	6·25	7·60	9·00	11·50	15·00	16·50

Planished Oval Chafing Dishes, Low Covers.

Inch	10	12	14	16	18	20
Each	$3·25	4·25	5·20	6·20	7·80	9·25

Planished Low Dish Covers.

Inch	10	11	12	14	16	18	20
Each	$ ·70	·80	1·00	1·25	1·50	2·00	2·75

Planished Imperial Dish Covers.

Inch	10	11	12	14	16	18	20	22	24
Each	$1·55	1·70	2·00	2·60	3·15	3·45	4·60	5·45	6·30

Planished Etnas, on Stands.

Pints	1½	3	4	5
Each	$0·90	1·00	1·20	1·50	1·75

Planished Liquor Mixers.....Nos. 0 1 2
Per doz $2·00 2·10 2·45

Planished Oval Melon Molds.

Nos	2	3	4	5	6	7	8	9
Each	·60	·65	·70	·80	·90	1·00	1·15	1·35

Planished Oval Tumbler Warmers.
To fit 1, 2, 3, and 4 O. G. Urns.....each, $2·50
Planished Oval O. G. Urns.

Nos	0	1	2	3	4	5	6	7	8
Each	$4·90	5·45	6·00	7·00	7·75	9·25	11·25	12·50	15·00

Planished Round Urns.

Nos	0	1	2	3	4	5	6	7
Each	$4·20	4·85	5·45	6·30	7·75	9·00	11·00	14·25

Planished Round Oyster Dishes, (Complete)..Nos. 1 2
Each $2·10 2·80
Planished Oyster Dish Plates.....Nos. 1 2
Each $0·25 0·30
Oyster Dish Covers.....Nos. 1 2
Each $0·30 0·35

Tea Pot Handles—P. S. & W.....dis 20 %
Stow's Patent Hollow Tea Pot Handles.

No. 1, Small	3½ inches	per gross,	$11·50
No. 2, Medium,	5¾ "	"	12·50
No. 3, Large,	6½ "	"	13·50
No. 4, Ex. Large	7¼ in., for Wash Pitchers &c.	"	18·00

Solid Iron. Tin Tipped.

No. 10, Small,	4¾ inches	per gross,	$9·00
No. 15, Medium,	5½ "	"	9·50
No. 20, Large.	6½ "	"	10·75

Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.

No. 12, Bronzed and Tin-Tipped	per gross,	$13·50

Saucepan Handles, Of Best Malleable Iron.
P. S. & W.....dis 20 %

Japanned.

No. 1, 5½ inches long	per gross,	$3·50
No. 2, 6 "	"	3·75
No. 3, 6½ "	"	4·00
No. 4, 7¼ "	"	4·25
No. 5, 8 "	"	4·50
No. 6, 9 "	"	4·75

Tinned.

No. 1, 5½ inches long	per gross,	$4·25
No. 2, 6 "	"	4·50
No. 3, 6½ "	"	4·75
No. 4, 7¼ "	"	5·25
No. 5, 8 "	"	5·50
No. 6, 9 "	"	5·75
Japanned	per lb.,	·16
Tinned	"	·20

Iron Kettle Ears (P., S. & W.).....dis 45 %
Half gross pairs in a package.
Tinned.

Nos	1	2	3	4	5	6	7
Per gross pairs	88c	$1·00	1·50	1·75	2·10	2·75	3·75

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	75c	88c	$1·25	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle Ears.

Nos	4	5	6
Per gross pairs	$1·25	2·10	2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos	1	2	3	4	5	6	7
Per gross pairs	1·00	1·25	1·50	1·75	2·00	2·50	3·00

Malleable Iron Kettle Ears for Coal Hods etc.
P., S. & W.....dis 20 %
No. 10 Small.....₩ ℔. Tinned 24c; black, 16c
No. 20 Medium.....₩ ℔, " 22c; " 16c
No. 30 Large.....₩ ℔, " 20c; " 16c
No. 40 Extra Large.....₩ ℔, " 20c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in..dis 25 %
Plain, 8c.; Japn'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned.....30c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.).....dis 35 %
Plain with drilled holes, per lb.....8c
Plain with Cast " 8c
Plumbers' Scrapers—(P. S. & W.).....dis 25 %
Extra quality; length 6 in., per doz.....$4·00

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb.; Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—American.

Foundry No. 1	₩ ton,	$27 00 @ 28 00
Foundry No. 2	"	25 00 @ 26 00
Gray Forge	"	23 00 @ 27 00
White and Mottled	"	

SCOTCH.

Coltness	"	37 00 @ 38 00
Glengarnock	"	36 00 @ 37 00
Eglinton	"	33 50 @ 34 00

Bar Iron.
Am. rennued, at mill.....nominal.....
Rails.
Welsh, gold.....₩ ton,
American, at works, currency....." 48 00 @ 53 00
Old Rails.....27 00 @ 28 00
Scrap.
Wrought Scrap....." 34 00 @ 35 00

Bar Iron from Store.

Common Iron.

¾ to 2 in. round and square	₩ ton	$60 00 @ 62 50
1 to 6 in. x ¾ to 1 in.		
Rennued iron.		
¾ to 2 in. round and square	"	62 50 @ 65 00
1 to 6 in. x ¾ to 1 in.		
1 to 6 in. x ¼ and 5-16	"	67 50 @ 70 00
Shafting Iron—2¾ to 4 in.	"	75 00 @ 90 00
Rods—5-16 to ¾ round and square.	"	67 50 @ 110 00
Bands	"	80 00 @ 82 50
Hoops—¾ to 2 in.	"	90 00 @ 135 00
Swedish Iron.		
Ordinary sizes	"	130 00 @ 132 50
Plow size	"	145 00 @ 150 00

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20	₩ ℔ 4¼	5¾c	5¾c
21 to 24	" 4¼ @ 4¾c	5¾c	5¾c
25 to 26	" 4¾c	5¾c	5¾c
27	" 5c	5¾c	6c
28	" 5¼c	5¾c	6¼c

Galvanized, 1 to 20, prime, ₩ ℔ 9; 2d quality.....₩ ℔ 8c
" 21 to 24 " " 10 " " 9c
" 25 to 26 " " 11 " " 10c
" 27 " " 12 " " 11c
" 28 " " 13 " " 12c

Patent Polished.....₩ 15c
Russia, Nos. 8 to 28....." 17½c
" Stained. No. 1....." 16½c
Belgian....." 10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

¼	5	5¼	6	7	inch.
$2·50	3·50	4·50	5·25	6·50	per doz.

RUSSIA IRON.

4½	5	5½	6	7	inch.
$5·00	7 00	9·50	12·00	14·00	per doz.

COPPER—DUTY: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.

American Ingot	₩ ℔	22 @ 22½c
English	"	

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.

Brazers Copper, ordinary sizes, over 16 oz., per square foot	33c	₩ ℔
Brazers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	35c	"
" " 12 oz. ₩ sq. ft. and ughter	39c	"
Bolt Copper	33c	"
Copper Bottoms, ₩ c. ₩ ℔		net

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier	35c.	By the case,	c.	₩ ℔
12 oz. and lighter	36c.	"	38c	"

Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60

14 and 16 oz. and heavier	38c.	By the case,	37c.	₩ ℔

(And all sizes not over 20 inches wide.)

20x60

14 and 16 oz. and heavier	40c.	₩ ℔
12 oz.	43c.	"

TINNING.

14x48, by the case	8c.	₩ sheet
14x48, less than case	10c.	"
Boiler Sizes, 7 and 8 inch	12c.	"
" 9 inch	15c.	"
Other sizes not larger than 30x60	2½c.	₩ sq.
Larger than 30x60	3c.	"

LEAD—DUTY: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.

Spanish	6½ @ 7c	gold
German Refined	6½ @ 6¾c	gold
English	6¼c.	gold
American	6½ @ 6¾c	gold
Bar	dis 10 %	8½c.
Pipe	dis 10 %	8½c.
Tin Lined Pipe	dis 10 %	10½c.
Sheet	dis 10 %	8½c.
Shot	dis 10 % Drop, 9c.	Buck, 9½c.

BABBITT METAL.

N. P. U	₩ ℔	6½ @ 9c
A, 25c.; B, 30c.; C, 18c.; D, 12c.	₩ ℔.	

SOLDER.....No. 1, 15c; No. 2, 13½ @ 14c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3¾ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, whatever form or description shall be classed as

American Cast Steel.

Tool		15 @ 16c
Spring		10c
Homogeneous		12½c
Tire		12½ @ 13½c
Machinery (round and square)		10 @ 11c
File		11c
Sheet		14 @ 16c
Saw Plate, mill and mulay		14 @ 16½c
Saw Plate, gang and X cut		13 @ 14c
" circular as to size		18 @ 30c

Chrome Steel.

Tool	₩ ℔	20 @ 21c
Tool, extra fine	"	40 @ 75c
Spring	₩ ℔	12c and upward
Machinery	₩ ℔	14c
Hammer	"	15c,
Gun or Homogeneous	"	16c

English Steel.—payable in gold, dis 5 % cash.

" Best Cast	₩ ℔	18c
" Extra Cast	"	19c
" Round Machinery, Cast	"	11½c
" Swaged, Cast	"	18c
" Best Double Shear	"	18c
" Blister, 1st quality	"	13½c
" " 2d quality	"	11½c
" " 3d quality	"	10½c
German Steel, Best	"	11½c
do 2d quality	"	10½c
Sheet Cast Steel, 1st quality	"	18c
" " 2d quality	"	16c
" " 3d quality	"	14c
File Steel, Flat and ⅞ Round	"	12½c
" Square and Round	"	13c
" Mill	"	13½c
" Taper to 4 inch	"	17c
" Taper 3 and 3½ inch	"	18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	6¼ @ 7c	gold
American "	6¾ @ 11c	currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 1·1c. per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Bancs, subject to duty of 10 per cent

Banca	₩ ℔	26c.,	gold
Straits	₩ ℔	22½c.,	gold
English	₩ ℔	22c.,	gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal		11·50 @ 11·75
12x12, "		12·00
14x20, "		12·25
I X 10x14, "		13·75
12x12, "		14·25
14x20, "		14·75
D C 12½x17 "		11·00
D X 12½x17 "		13·25
For each additional X add		·25

COKE TIN PLATE.

	Best Quality.	2d Quality.	Ordinary.
I C 10x14	$10·25 @ 10·75	9·50 @ 10·00	9·25 @ 9·75
I C 12x12	10·50 @ 10·75	10·00	9·25 @ 9·50
I C 14x20	10·50 @ 11·00	10·50	9·25 @ 9·50

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$10·50	9·50 @ 10·00	8·25 @ 9·25
I X 14x20	12·75		
I C 20x28	21·00 @ 21·50	19·50 @ 2··00	16·50 @ 18·00
I X 20x28	26·00		
I C 20x20	24·00		

ZINC.—DUTY: 2½c or Block, $1 50 per 100 lbs. Sheet 2¾c. ₩ ℔. All subject to a reduction of 10 per cent.

Sheet	cask	10½c
"	open	10¾c

Old Metals.

(Dealers' Selling Prices.)

Copper		@ 20
Yellow metal	14	@ 15
Brass	13	@ 14
Heavy Composition	17	@ 18
Old lead, solid	6	@ 6¼
Tea lead		5
Wrought Iron	1½	@ 1¾
Sheet Iron	0¾	@
Cast iron	1	@ 1¼
Machinery iron	1¼	@
Zinc	5	@ 5¼
Pewter, No. 1	17	
" No. 2	10	@ 12
Spelter	5½	@ 6

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ℔	30c
" Ordinary		6c
" Ivory Drop, fair		15c
" best		20c
Black Paint, in oil	kegs, 8c.;	asst'd cans, 11 c
Blue, Prussian, fair to best		50 @ 75c
" " in oil		35 @ 65c
" Chinese, dry		8c
" Ultramarine		25 @ 30c
Brown, Spanish		1½c
" Van Dyke		8c
Carmine, 40		$12 00
Green, Chrome		15 @ 25c
" " in oil		18 @ 27c
" Paris	good, 30c; best,	40c
" " in oil	30c "	45c
Mineral Paints		1¼ @ 4c
Orange Mineral		14½c
Red Lead, American		9¾c
" " English		10½c
" Venetian (N. C.) dry		2¾c
" " in oil	asst'd cans, 11c; kegs,	8½c
" Indian, dry		10c
Rose Pink		13c
Sienna, American, Raw		4c
" Burnt		4½c
" " in oil		16 @ 20c
" Raw "		15 @ 25c
Umber, Burnt		4 @ 8c
" " in oil		16 @ 21c
" Raw		5½ @ 7½c
" " in oil		16 @ 22c
Vermillion, Chinese		
" English		1 90 gold
" Trieste		1 65 "
" American, Common		25c
White Lead, American, pure dry		10c
" " in oil		11c
White, Paris, English, prime	in bbls.	2½ @ 3c
Yellow Ochre, French		2½ @ 2¾c
" " Vermont	in oil, asst'd cans, 11c; kegs,	8½c
" Chrome	in cans	1¼c
" " in oil		17 @ 21c
Zinc White, American No. 1 dry		18 @ 22c
" " 1, in oil		9c
" French (Paris)		11c
" " in oil		11 c
		12 c

Oils.

Linseed Raw	₩ gal. casks,	79c.	80	80c
" Boiled	"	84c.	"	85c
Whale, Crude				
" Bleached Winter			"	
Sperm, Crude			"	1·6c
" Winter unbleached			"	1·8c
" bleached			"	1·90
Seal, Extra Refined			"	
Lard, Pure Winter			"	1·15
" Spring			"	1·10
Cotton Seed, Crude			"	60c
" Southern Yellow			"	65c
" White			"	
Neatsfoot, Winter		70c @	$1·10	
Natural Lubricating		38c @	40c	

Sundries.

Asphaltum		8c
Benzine	₩ gal.	16c
Chalk		1½c
" Block		
Dryer, Patent, Am'n	asst'd cans, 10½c.; kegs	9c
" " English	" 11c.;	9c
Flocks		
Frostings		50c
Glue, White		33 @ 47c
" Sheet		40c
Glaziers' Points, Zinc		8c
Gum, Copal		30c
" Damar		25c
" Shellac, English		80c
" " dark		75c
Litharge		10c
Pumice Stone, selected Lumps		4 @ 6c
" powdered		4c
Putty in bladders		3½c
" in bulk		3c
Rotton Stone, soft, English		8c
Spirits Turpentine		80c
Whiting, Spanish		1c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

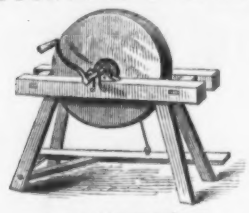
SIZES.	I.	II.	III.	
6 x 8 to 10 x 15	$10·25	$9·25	$8·75	$8·00
11 x 14 to 16 x 24	12·00	11·00	10·00	9·50
18 x 22 to 20 x 30	15·00	13·50	12·00	10·50
15 x 36 to 24 x 30	17·50	15·25	12·50	
26 x 28 to 24 x 36	18·25	16·00	13·25	
26 x 36 to 26 x 44	20·00	18·00	14·50	
26 x 46 to 30 x 54	21·00	19·00	15·25	
30 x 52 to 30 x 54	22·50	20·25	16·25	
30 x 56 to 34 x 56	24·50	21·75	19·00	
34 x 58 to 34 x 60	26·00	24·50	21·50	
36 x 60 to 40 x 60	30·50	27·00	24·50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$18·50	$15·00	$14 00	$13·00
11 x 14 to 16 x 24	19·25	17·25	16 00	15·25
18 x 22 to 20 x 30	24·00	21·75	19·25	
15 x 36 to 24 x 30	28·00	24·50	20·00	
26 x 28 to 24 x 36	29·25	25·75	21·25	
26 x 36 to 26 x 44	32·00	29·00	23·25	
26 x 46 to 30 x 50	33·75	30·50	24·50	
30 x 52 to 30 x 54	36·00

Grindstones, Emery, &c.

Walter R. Wood,
GRINDSTONES.



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LAKE HURON,
AND BEREA.

Also Scythe Stones.
WORTHINGTON & SONS, Mfrs.,
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EMERY WHEELS AND MACHINERY
Upon which to run the same, of all kinds.
EMERY Emery Cloth, Mill Stone CEMENT. TRADE MARK. DIAMOND Tools, Oil Stones,
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Emery Wheel Co.,
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"LEHIGH" Emery
Wheels and Machines.
Send for Circulars.

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THE
Rocky Mountain Vermilion Paint
is "Nature's Compound" of Copper, Mercury, Lead and Iron. A pure Oxide of Metals, containing no earthy matter, hence we claim and are prepared to *prove* that it is the Best and Cheapest Paint in the market. Properly mixed, we will guarantee it to cover double the surface and wear twice as long as ordinary paints. It will not Peel, Scale, Crack or Blister, though subjected to high degrees of heat. It will effectually Prevent the Corrosion of Metals, even in mid ocean. Warranted superior to red lead or any other lead, for any and all purposes for which paint is required. Please send for circulars.
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NO CHIMNEY KEROSENE LAMP
WITHOUT SMOKE OR SMELL.
Light equal to gas. Adapted to Dwellings, Churches, Factories or Public Buildings. Breakage of one chimney per week will pay for Lamp in one year. Every Lamp guaranteed for one year. Liberal discounts to trade.
PATENT MECHANICAL LAMP CO., 138 Chambers St., N. Y.

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Genuine Improved Patent

SCREW WRENCHES.

Manufactured by

L. COES & CO.,
Worcester, Mass.

Established in 1839.
Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

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COHOES, Albany Co., N. Y.

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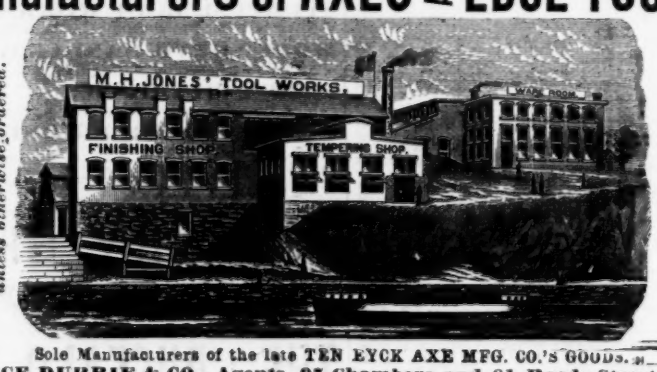
All goods stamped and labeled M. H. JONES & CO. *unless otherwise ordered.*



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Ausable Horse Nail Co.

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Hammer Pointed, Polished & Blued
HORSE NAILS,
FROM
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Orders promptly filled at lowest market rates.
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MANUFACTURERS OF
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Litharge, Orange Mineral,
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AND PAINTERS' COLORS.

ATLANTIC WHITE LEAD CO. — PURE — ROBERT COLGATE & WARRANTED

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Offices, 31st. St. below Chestnut, PHILADELPHIA.

Brooklyn White Lead Co.

BROOKLYN WHITE LEAD CO., INCORPORATED 1868
SUPERIOR PURITY, DURABILITY AND COLOR
ADDITIONAL TRADE MARK.
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$50 Reward for detection of counterfeits.
F. HOWE, Tr.
Office, No. 89 Maiden Lane, NEW YORK.
BROOKLYN WHITE LEAD COMPANY PREMIUM LEAD WARRANTED PURE

TRADE MARK.
White Lead, Red Lead and Litharge.
89 Maiden Lane, NEW YORK.
FISHER HOWE, Treas.

JOHN JEWETT & SONS
Manufacturers of the well known Brand of
WHITE LEAD.

JEWETT & SONS' PERFECTLY PURE WHITE LEAD.

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Also Manufacturers of
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MANUFACTURER AND PROPRIETOR,
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CARR'S POSITIVE CIRCULATING
STEAM RADIATOR

THE ONLY UPRIGHT STEAM RADIATOR MADE WHICH HAS A POSITIVE CIRCULATION.
ALSO
WROUGHT IRON PIPE, BRASS AND CAST FOR WORK &c.
PLUMBERS, STEAM AND GAS FITTERS.
SEND FOR DESCRIPTIVE CIRCULAR & PRICE LISTS.

AMERICAN TWIST DRILL CO.,
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Sole Manufacturers of the celebrated
Diamond Solid Emery Wheel
MANUFACTURERS OF
PATENT EMERY WHEEL MACHINERY,
And Automatic Knife Grinders
For the rapid and perfect grinding of Planer, Paper Cutting, Leather Spliting and other long Knives.
These goods are unsurpassed for elegance of design, workmanship, capacity and durability. First premium awarded by American Institute, N. Y., 1870 and '73; Medal and Diploma by M. C. M. A., Boston, 1874.

Fast Cutting—Free from Glazing—It is the best Solid Emery Wheel.
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ENGINE LATHES,
From twelve (12) to forty-eight (48) inches swing;
Hand Lathes; Wood Turning Lathes; Vertical Drills; Boring Mills; Tapping and Centering Machines; Screw Press for Mandrels Grindstone Boxes.

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Manufacturers of the following *Patented* Articles of
MALLEABLE IRON:
Hammer's Adjustable Clamps.
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Malleable Iron Castings
Of Superior Quality made to order.

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SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.
LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

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Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.
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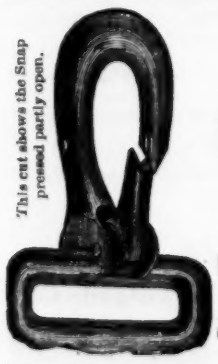

This cut shows the Snap pressed partly open.

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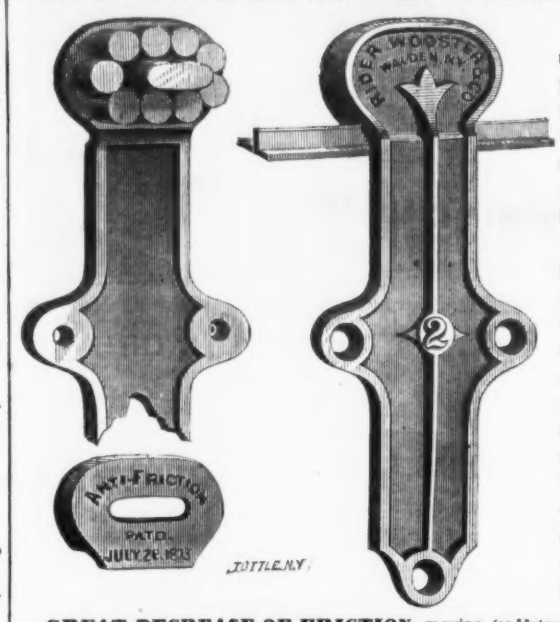

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Great Strength. Unlimited Durability.
No Axles and Sheaves to grind and break.
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Thorough protection from the weather.
It will not clog with snow and ice.
It cannot run off the track.
It causes the door to run perfectly true.
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It is compact, Simple and Beautiful in design.

This Hanger will fit any ordinary rail, but our rail is preferable, from the fact that it has a double flange at the bottom, so that the screws will not work out and allow it to rock or tip over.

No. 1 Hanger, corresponding to 4, 5 and 6 in. Sheaves or Rollers.....per pair, $1·25
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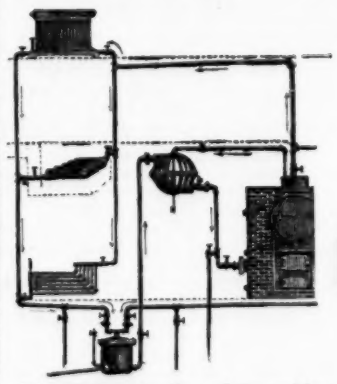

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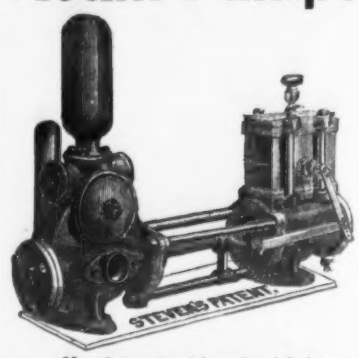

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Bennett Hotchkiss and N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal as of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of BENNETT HOTCHKISS (who in an interference case with Goulding and Cheney was declared the first inventor) and N. C STILES. Our improvements consist:

First.—Of an arrangement of parts that makes it the most complete Jobbing Hammer, and will take the place, to a great extent, of all other kinds for forging. In addition to the upright rod, which is operated by the hammer to open and close the rolls, we place another rod the lower end of which is secured to the end of a lever which is operated by the hand or foot, which operation also opens and closes the rolls at will. The lower end of this rod has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer. The belt or board passes up between two clamps situated under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold up the hammer. To let the hammer fall the clamps are opened by pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back roll is made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable collar on the upright rod allows the operator to obtain *any hight* of blow desired automatically. If one blow is wanted, press upon the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blows will be repeated until the pressure is removed. If a blow of less hight than the collar is set for is required, work the hand lever, which will give you any hight of blow desired. The hammer can be held up at any point below the collar by bringing the hand lever into action when the hammer is at the desired hight, so that the next blow can be given from a state of rest, of less hight than the collar is set for. This is a feature no other drop has; that is, the first blow struck can be of less hight than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the board from touching either roll and prevents the same from being worn uneven.

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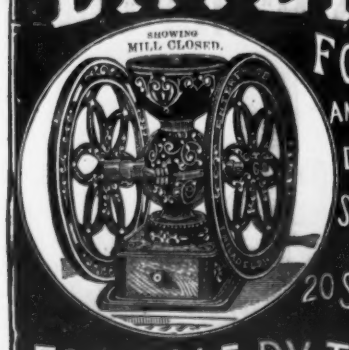

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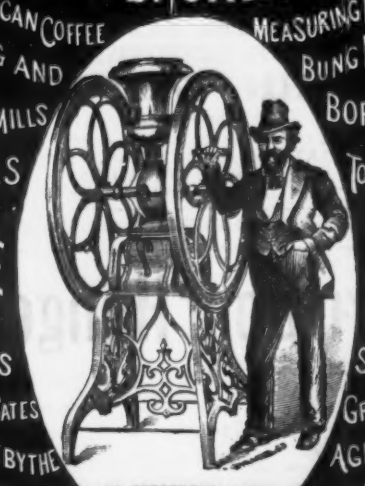

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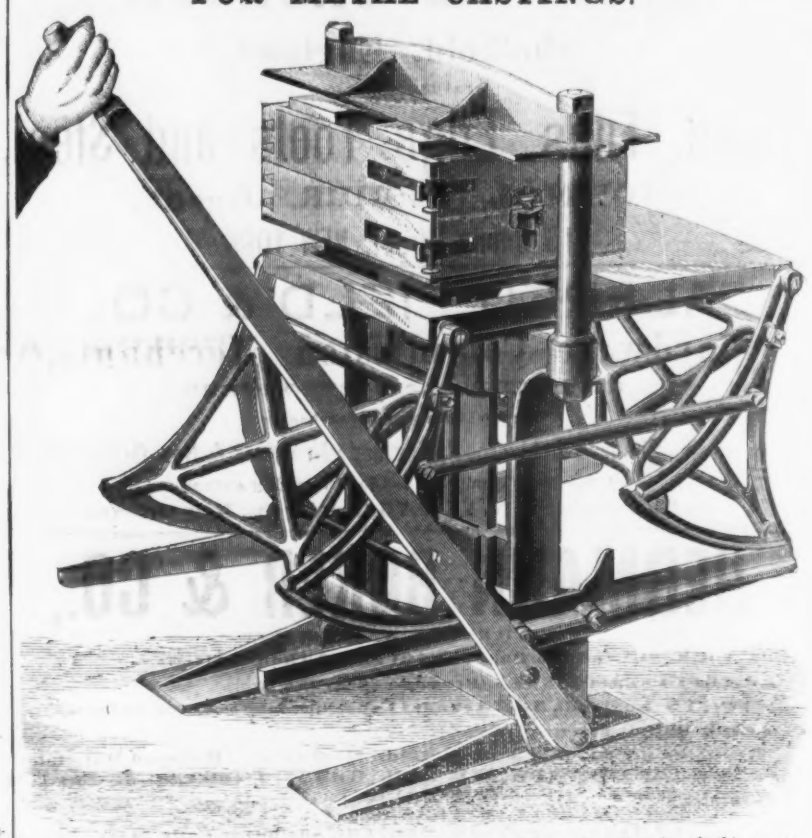

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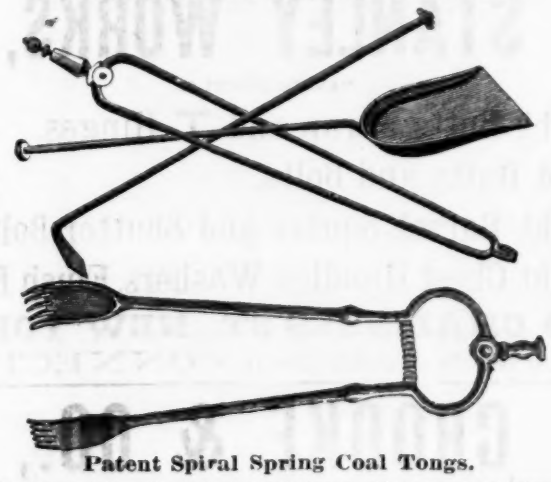

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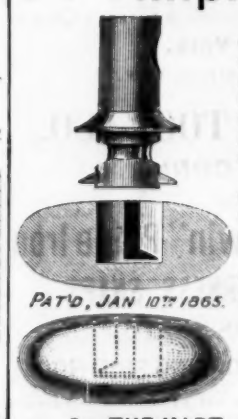

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" Bastard.....
" Taper.....
Butcher's Mill.....$5 00 to £ gold
" Bastard.....$ 00 to £ gold
" Taper.....$ 00 to £ gold
Fluting Machines.
E. F. M.—4¼ in. rolls, $5 50.....dis 10 %
" —6 in. rolls, $6 65.....dis 10 %
Mrs Knox—4 in. rolls, $5 50.....dis 10 %
" —6 in. rolls, 6 65.....dis 10 %
Hammers.
Yerkes & Plumb's.....dis 15 %
Hammond & Son's.....dis 15 %
Yerex.....dis 15 %
Hatchets.
Beatty's.....dis 15 @ 30 %

Shingling and Half. { ₩ doz..	$7 00	7 50	7 75	8 00
{ No.....	1	2	3	

Yerkes & Plumb.....dis 15 %

Shingling and Half. { ₩ doz..	$7 00	7 50	8 00	8 50
{ No.....	1	2	3	4

Claw.... { ₩ doz..... $7 50 | 8 00
{ No..... 1 | 2 | 3

Hinges.—Strap and T.....dis 40&10 %
Lull & Porter's Blind.....dis 40&10 %
" by the case dis 5 %
Clark's Mortise Blind.....dis 40 %

Horse Nails.	Nos.	6	7	8	9	10
Ausable.		27	25	24	23	22
Globe.		28	26	25	24	23
Brundage.		26	24	23	22	21
	Nos.	5	6	7	8	9
Putnam.		32	28	26	25	24

On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.....dis 45 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 50 %
Scandinavian Pad Locks.

₩ doz.....	$10 50	10 50	12 00	12 00	15 00	15 00	} dis 15 %
No.....	9	9¾	10	10¾	11	11¾	
₩ doz.....	$18 00		18 00		22 00	22 00	} dis 15 %
No.....	12		12¾		13	13¾	

Trunk Locks.....dis 5 @ 10 %
Thumb and Roggens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 60 @ 60&10 %
Lincoln's " .....dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets .....dis 20 @ 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 15 %
Woodruff.....dis 15 %
Stowe.....dis 15 %
Hale's.....dis 25 %
Stuffers.....dis 10 %
Planes.—Auburn Tool Co.. "Bench" .....dis 40 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 33⅓ %
Evans Pat. Circular.....net
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....dis 60&10 %
Rakes.—Cast Steel Garden.....dis 40 %
Malleable Garden.....dis 40 %
Wood Head Iron Teeth.....dis 40 %
Rules.—All Maker's Boxwood...dis 60&10 @ 60, 10&10 %
All Makers Ivory.....dis 50 %
Steelyards.—American Pattern.....dis 15 %

₩ doz....	$5 50	7 00	9 00	1 00	11 00	12 00
No.....	50	100	150	200	250	300

English Pattern.....dis 15 %

₩ doz.....	$7 00	8 67	10 67	12 67	14 67	16 67
No.....	50	100	150	200	250	300

L. F. & C. Excelsior.....dis 10 %

₩ doz.....	$9 00	10 00	12 00	15 00	18 00	21 00
No.....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz. $10 50 net
Golden Clipper No. 10, Boxed and Sharp'd.₩ doz $10 50
Green " " " " " 9 00
Common Scythes.....₩ doz $7 20 @ 9 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 15 %
Disston's Hand.....dis 13½ %
W. McNiece's H'd, Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list.....dis 40 %
" Champion.....dis 45 %

Shovels and Spades.
Rowland's Plain Back, Jan. 25d.....dis 25 %
" Back Strap " .....dis 25 %
Oliver Ames & Sons.....new list dis 12½ %
Brady Shovel Co.....dis 12½&5 %
Sad Irons.—Richmond (polished face). per lb. 3¼c. net
Richmond (polished face)... by the cask " 3¼c. net
Stone.—Arkansas Oil, No. 1.....₩ ℔ $1 75
Turkey Oil, No. 1..... " 1 00
Washita Extra..... " 30c
" No. 1..... " 22c
" " 2..... " 18c
" " " " 5½c
Screws.—Iron.....new list, Jan. 1st, 1874, dis 55½ %
Brass.....dis 55½ %
Spoons.—
Plated.....dis 40 %
Britannia.....dis 50 %
German Silver.....dis 30 %
" Light.....new list dis 35 %
Lalance & Grosiean Iron.....dis 10 %
Springs.—Gray's Door.....dis 40 %
Torry's Door.....dis 40 %
Stocks and Dies......dis 15 %
Stove Polish.—Gem.....₩ gross, $5 00
Onyx..... " $5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 72½ %
" " " by the case...dis 72½&7½ %
Clout and Finishing Nails.....7½ %
" " " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " " .....dis 30 %
Vises.—Solid Box.....₩ ℔ net 15c
Wrenches.—Coes Genuine.....dis 40 @ 40&5 %
Coes Imitation Wrought Bar.....dis 50 %
" " Malleable Bar.....dis 60 "
" " (Kellogg) Malleable Bar.....dis 50 @ 10 %
Tafts Pattern (Wrought Bar).....65 %
" " Kellogg's (Nail Bar).....dis 65&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " Improved Raxter.....dis 25 %
" " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....dis 45 %
No. 19 to 26.....dis 47½ %
No. 27 to 36.....dis 45 @ 47½ %
Coppered 0 to 18.....dis 15 @ 20 %
Tinned Broom Wire.....dis 25 %
Galvanized Wire No. 0 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

February 8, 1875.

Augers—Snell Mfg. Co.....dis 25 %
Bits, Auger—Snell Mfg. Co.....dis 25 %
Bells, Cow—Yaw s Genuine.....dis 20 %
Bolts—Carriage and Tire.....dis 75&10 %
Braces—Bit, Spofford's Patent.....dis 50&10 %
Brads, Cut.....dis 50&7½ %
Boards—Stove, Brooks' Patent.....dis 30 %
Butts—Brass.....dis 30 %
Wrought Narrow.....dis 30&10 %
" Broad, Loose Joint.....dis 35&10 %
" Table and Back Flaps.....dis 30&10 %
Wrought Butts, Loose Pin.....dis 35&10 %
Belting—Rubber.....dis 30 @ 35 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1 25
" Rutherford ".....$1 00
Cases—Parlor Coal Hod.....dis 10 %
Chalk—White, Carpenter s .....₩ gross, 65c
Red, Carpenter's " 90c
Blue, " " $1 17
Chisels—Firmer Socket.....dis 60&10 %
Framing Socket.....dis 60&10 %
Corner Socket Chisels.....dis 60&10 %
Slick's Carpenters'.....dis 60&10 %
Castings—Malleable .....₩ ℔ 10c
Clothes Wringers, "Novelty" No. 2.....₩ doz $65 00
Elbows—Corrugated.....

	5	5½	6	7	
Charcoal	$3 50	4 50	5 25	6 50	} dis 10 %
Russia	7 00	9 50	12 00	14 00	

Files—Malschoss Bros.....dis 50 %
Fluters—Gereva Hand.....₩ doz, $15 00
Freezers Ice Cream—" Champion .....dis 30 %
Hammers—Henry W. Kip's.....dis 7½ %
Hinges—Window Blind—
Clark's.....dis 55&10 %
Sheoard's and Standard.....dis 55&10 %
Wrought Strap and T.....dis 35&10 %
Hods, Coal—Plain Black and Galvanized.....dis 10 %
Funnel, Black and Galvanized.....dis 10 %
Fancy and Helmet.....dis 10 %
Hooks and Staples—Wrought.....dis 70&10 %
Hooks—Belt.....dis 50&10 %
Hasps and Staples—Wrought.....dis 70&10 %
Sad Irons.....3½c
Kettles—Brass.....₩ ℔. 45c
Enameled.....dis 50&5 %
Knives, Drawing—Oval No. 1.....dis 60&10 %
Razor Blade.....dis 50&10 %
Lanterns "Peerless."....No. 1 | 9 | 10
₩ doz $36 00 | $10 50 | $13 75 dis 10 %
Tubular " with Guards.....
Machines—Apple Paring, "Turn Table".....8 00 ₩ doz
Mills, Coffee—Box and Slide, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American .....dis 30 %
Nails—Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 | 6 | 7 | 8 | 9 | 10
30 | 27 | 25 | 24 | 23 | 22c
" " Pointed & Polished.....and 1c ₩ ℔
" " 1000 lbs.....dis 5 %
" Clinton.....No. 6 | 7 | 8 | 9 | 10
21 | 19 | 18 | 17 | 16c
Packing—Rubber.....dis 30 @ 35 %
Pencils, Slate—Soapstone.....4 | 5 | 6in.
30 | 40 | 50c. ₩ 100
Case lots.....dis 20 %
Paint—White Lead, U. S. Gov't.....₩ ℔ 8½c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Rope—Manila, ½ inch and larger.....₩ ℔ 14½c
Sisal, ½ inch and larger.....11½c
Jute, all sizes.....9½c
Screws—"American Screw Co"—
Flat Head, Iron.....dis 52½ %
Flat Head, Brass.....dis 52½ %
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 40, 10&5 %
Britannia .....dis 45&10 %
Squares—Steel and Iron.....new list 50 %
Saws—Henry Disston & Sons.....dis 12½ %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Stove Polish—Gem.....₩ gross, $4 50
" Dixon's..... " 6 00
Trans. Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vases—Palace Coal.....dis 10 %
Vises—Parallel, Buffalo.....dis 25 %
Ware—French, Tinned sms Iron.....dis 25 %
Stamped and Japanned.....dis 5 %
Cast Iron Hollow.....dis 33⅓ %
Tin Plates.—Add for each X.....
10x14, IC, Charcoal...$12 00 | 14x20 C. terne.....$11 00
12x12, " ... 12 50 | 20x28 C. " 22 25
13½x17, " ... 17 50 | 20x28 X. " 27 25
14x20, " ... 18 00 |
Pig Tin—Straits.....38c @ 39c
Bar Tin.....30c
Solder.....No. 1, 16½c ; No. 2, 15½c
Sheet Zinc—
"Lasalle".....570 | 100 ℔ casks
$10 75 | 11 00 ₩ 100 lbs
Sheets.....$11 25
Iron Wire—Bright and Annealed.....dis 40 %
Coppered.....dis 35 %
Tinned.....dis 15 %

Tinned Broom, { Nos.	20	21	22	} dis 25 %
	20c	21c	21c	

Copper—Sheathing 14 @ 15 oz.....₩ ℔ 31c
Planished.....₩ ℔ 36c @ 38c
Bottoms.....₩ ℔ 32c
Bolts.....₩ ℔ 33c
Braziers' Sheets.....₩ ℔ 33c
Sheet Iron.—
18 Common.....$4 70
24 Common.....5 00
24 W. D. Wood & Co., Smooth Finish.....5 20

Am. Russia.....	A.	B.
	14c	11c
Gen. Russia, No. 1 stained		18c
" " clean		19c
Galvanized		dis 20 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$11 50 @ 12 00
I. X. 10x14 Charcoal..... 14 50 @ 15 00
I. C. Terne 14x20..... 10 00 @ 12 25
I. C. Terne 20x28..... 21 50 @ 23 50
I. C. Continuous..... 24 00
Block Tin.—
Pig.....₩ ℔ 27c @ 29c
Solder.—
S. & Co.....₩ ℔ 23c
Lead.—Pig.....₩ ℔ 7¼c.
Copper.—
Ingot.....₩ ℔ @ 24c
Planished..... " @ 36c
Sheathing..... " @ 33c
Copper Drops @ 33c
Zinc. Casq. 900 to 1000 lbs.....₩ ℔ 10¼c
Case, 100 lbs..... " 11 c
Slab..... " 7¼c
Bars......₩ ℔ 31c
A 1.....₩ ℔ 19c
Roofing ..... " 17c
Iron......₩ ℔ 3½c
Sheets. 6 to 9 lb.....₩ ℔ 38c
" 10 to 12 10.... " 35c
Braziers 13 lb..... " 32c
Copper Bottoms .. " 34c
Bright Wire.—dis 40 %
Sheet Iron.—
No. 18 Am. Com.....4 80
No. 24 Am. Com.....5 00
Patent Am. Russia "A," Nos. 24, 25 and 26...14c
Russia, No. 9, 10, 11&12. 18c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 30
" 25 & 26..... 6 50
" 21 to 24 Charl... 7 80
" 25 & 26 " .. 8 00
Copper.—
Sheathing.....32c
Copper Bottoms....34c
Planished Copper.—
Sheathing, 14x48.....38c
Boiler Size, No. 7.....40c
" " No. 8.....40c
" " No. 9 .....40c
Pig Tin.—
Large Pigs.....29c
Small Pigs.....29½c
Bars.....30c
Solder.—No. 1.....16c
No. 2.....15c
Bright Wire....dis 40 %
Sheet Iron.—
No. 18 Am. Com.....4 80
No. 24 Am. Com.....5 00
Patent Am. Russia "A," Nos. 24, 25 and 26...14c
Russia. No. 9, 10, 11&12. 18c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 30
" 25 & 26..... 6 50
" 21 to 24 Charl... 7 80
" 25 & 26 " .. 8 00

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal
IC. 10x14.....$12 00
IX. 10x14.....14 75
XX. 10x14.....17 50
IC. 12x12.....12 50
IX. 12x12.....15 25
IC. 14x20.....18 00
IX. 14x20.....15 75
XX. 14x20.....18 50
XXX. 14x20.....21 25
XXXX. 14x20.....24 00
Do. 100 Plate.....11 50
DX. " 14 25
DXX. " 17 00
DXXX " 19 75
DXXXX 100 Plate..22 50
IX. 14x14.....24 00
IC. 10x14 W.....11 00
IX. 10x14 W.....13 75
Roofing Tin.—Best Char.
IC, Terne, 14x20.....$11 00
IX. " 14x20.....13 75
IC, Terne, 20x28.....13 00
IX. " 20x28.....28 00
Coke Tin.—
IC, 10x14 Coke.....$10 25
IX. 10x14, Coke 13 00
IC, 14x20, " 11 25
Sheet Zinc.—
Any width.....11c
Copper.—
Sheathing.....32c
Copper Bottoms....34c
Planished Copper.—
Sheathing, 14x48.....38c
Boiler Size, No. 7.....40c
" " No. 8.....40c
" " No. 9 .....40c
Pig Tin.—
Large Pigs.....29c
Small Pigs.....29½c
Bars.....30c
Solder.—No. 1.....16c
No. 2.....15c
Bright Wire....dis 40 %
Sheet Iron.—
No. 18 Am. Com.....4 80
No. 24 Am. Com.....5 00
Patent Am. Russia "A," Nos. 24, 25 and 26...14c
Russia. No. 9, 10, 11&12. 18c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 30
" 25 & 26..... 6 50
" 21 to 24 Charl... 7 80
" 25 & 26 " .. 8 00

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HAMMOND'S WINDOW SPRINGS,

For supporting and locking upper and lower sashes of all windows. Not a coiled spring, but one *forged* from best materials.

W. S. HAMMOND,
Lewisberry, York Co., Pa.

Gold Medal at Md. Ins. Exposition, Oct. 1874.

Er dless-Lever House & Weight Mover.

Patented January 14, 1873.

Send for Circular and Price List.

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Incorporated, Oct., 1874. Reliable State Agents Wanted.

FULL JEWELED,

i. e., Ventilators are now made with

GLASS AGATES, LIKE WATCHES, FOR STEEL AXLES TO REVOLVE IN, AND HAVE A REGULATOR ATTACHED AND ARE MUCH IMPROVED.

Will Prevent Show Windows from Sweating (by partly equalizing inside and outside air) and Supply Pure Air without Draft.

IN BEDROOMS, OFFICES, STUDIES, SCHOOLS, &c., &c.

Size of Ventilator, six inches diameter.

Construction Entirely New.

Handsome as a Watch.

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Samples (Nickel and Gilt) sent by mail on receipt retail price, $2·50, including instructions of a new and ready method for inserting in glass in a few minutes. The difference between retail and trade price for sample will be allowed on next order.

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New Bedford, Mass.,

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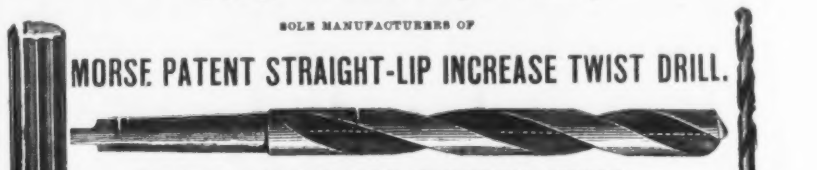
MORSE PATENT STRAIGHT-LIP INCREASE TWIST DRILL.



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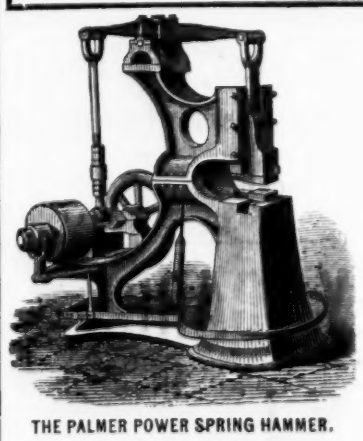

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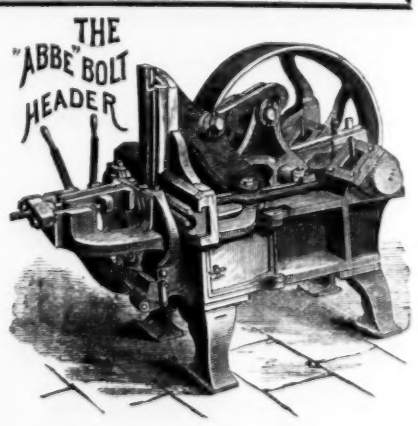

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Steel.

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SHEFFIELD, ENGLAND.

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In calling the attention of consumers of Steel in any of the parishes above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed

---

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for Turning Tools, Taps, Dies, Drills, &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*

Warehouse, 57 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.,

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MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

CHROME STEEL COMPANY,

MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Principal Office & Works, Kent Ave. and Keep St., Brooklyn, E. D., N. Y.

AGENCIES,

Kimbark Bros. & Co., Chicago, Ills.
Huntington, Hopkins & Co., San Francisco and Sacramento, Cal.
M. M. Buck & Co., St. Louis, Mo.
Potter & Hoffman, Philadelphia, Pa.
Geo. Dunbar & Co., Boston, Mass.
Wood & Leggat, Hamilton, Ont.

WILLIAM TOOTHE, Genl. Sales Agent, 110 Liberty St., N. Y. City.

Steel.

Sheffield Steel Works,

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of Extra Quality Tool

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of Cast and German

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators,

Reaper Bars, ow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works

Wolverhampton, England,

MANUFACTURERS OF

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.

Also, Plow and other Iron.

VAN WART & McCOY, Agents,

43 Chambers St., New York.

A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.

Manufacturers of all descript of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

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Gunpowder.

GUNPOWDER

DUPONT'S

Sporting, Shipping, and Mining

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DUPONT'S GUNPOWDER MILLS

ESTABLISHED IN 1801,

Have maintained their great reputation years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle, and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER.

of all kinds and descriptions.

For sale in all parts of the country. Represented by

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70 Wall Street, NEW YORK.

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LAFLIN & RAND POWDER CO.

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invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder

Orange Rifle, *Orange Ducking*

Lightning, *Audubon.*

SAFETY-FUSE at wholesale.

Steel.

HUSSEY, WELLS & CO.

MANUFACTURERS OF ALL DESCRIPTIONS OF

CAST STEEL,

INCLUDING

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUFACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c.

ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel,"

For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

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Pittsburgh Steel Works.

ESTABLISHED IN 1845.

ANDERSON & WOODS,

MANUFACTURERS OF

BEST REFINED CAST STEEL,

Cast and German Plow and Spring Steel,

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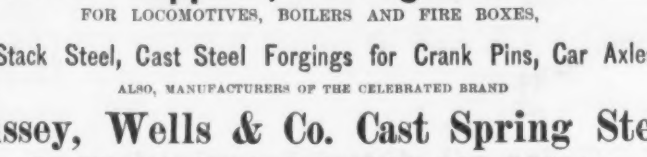
W. F. POTTS, SON & CO., 1225 Market Street, Philadelphia.

FARIST & WINDSOR,

BRIDGEPORT, CT., 1872.



WINDSOR LOCKS, CT., 1860.

ALL DESCRIPTIONS OF

CAST STEEL

made to order for **Cutlery, Dies, Agricultural Implements. Decarbonized Steel, Frog Plates and Points, Steel Forgings to Pattern.** Quality equal to the best. Prices as low as the market admits.

JOEL FARIST. JOHN B. WINDSOR.

LABELLE STEEL WORKS.

SMITH, SUTTON & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also, Springs, Axles Rake Teeth, &c.

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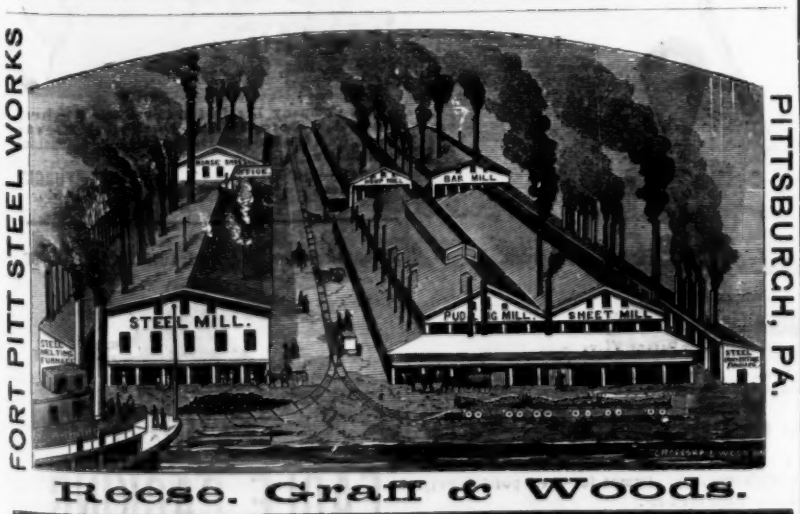
Post Office Address, Pittsburgh, Pa,

FORT PITT STEEL WORKS



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Philadelphia Forging Works.

MANUFACTURERS OF

Wrought Iron Carriage & Wagon Hardware

AND ALL DESCRIPTIONS OF

Steel & Iron Drop Forgings

OFFICE AND WORKS:

1203, 1205 & 1207 East Thomoson St. above Cumberland PHILADELPHIA.

Chain.

Chicago Chain Works,

S. G. TAYLOR, Prop.

Nos. 98 & 100 Indiana St., Chicago, Ill.

Dredge and Crane Chain, a specialty.

American Chain Cable Works.

Thirty years' experience in the business.

KENDRICK & RUNKLE, Trenton, N. J.

Manufacturers of **Cable, Crane, Car Brake, Agricultural Machine and Harness Chains** of every description. Also, sole manufacturers of

KENDRICK'S PATENT IMPROVED TRIPLE COAL MINE SLOPE CHAIN.

N. B. The highest grades of Crane Chains a specialty.

New England Chain Works

771 Eddy Street, Providence, R. I.

Manufacture **Iron Chain** of every description.

Mowing Machine, Crane, Break Draft Chains, &c., &c.

Also, **Latest Improved Cotton Can Rings.**

THOS. WYATT, Proprietor.

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ESTABLISHED 1852.

JOSEPH CHURCHYARD,

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Manufacturer,

CLINTON, cor. ADAMS STS.,

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SASH, BLINDS, DOORS,

Cisterns, Tanks, Stairs, Hand Rails, Newels, Mirror Frames, Mantels, Curtain Cornices, Book Cases, Veneered Doors, Mouldings, and complete interior and exterior finish for houses.

ROUGH AND PLANED LUMBER,

Flooring, Siding, Shingles, Lath and Fence Posts.

Blacksmiths' & Moulders' Bellows.

THE PULSOMETER,

OR

Magic Pump.

The **simplest, most durable** and **effective** pump now in use. Adanted to **all situations,** and performs all the functions of a steam pump without its consequent wear and care. No machinery about it. Nothing to wear out. Will pump **gritty** or **muddy** water without wear or injury to its parts. It cannot get out of order. Branch Depots: 104 Sudbury St., Boston, Mass.; 1227 Market St., Philadelphia, Pa.; 59 Wells St., Chicago, Ill.; South Western Exposition, New Orleans, La.; 811 & 813 North Second St., St. Louis, Mo.

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Engineers, Anglo-Swedish Merchants And Engineers' Agents.

First-class Makers of **Machinery & Specialties, &c.,** desirous of extending their exports, will find it in their interest to supply us with full particulars and prices, &c., &c.

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CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)

Tin Plate.—

10x14, IC, Ch'l. Good	$	14x20, IX, Ch'l Best	$15 50
10x14, IC, " Best	12 00	14x20, IXX, " "	18 00
10x14 IX, " "	14 50	14x20, IXXX, " "	20 50
12x12, IC, " "	12 50	DC, 100 Plate, " "	12 00
12x12, IX, " "	15 00	DX, " "	14 50
14x20, IC, " "	13 00	DXX, " "	17 00
Roofing IC, Charcoal, Best		DXXX, " "	19 50
Roofing IX, Charcoal "			11 50
20x28, IC, Charcoal Roofing, Com			14 00
20x28, IC, "		Fair	22 00
20x28, IC, "		Best	22 50
20x28, IX, "			23 00
10x14, IC, Coke Plates			27 50
14x20, IC, "			10 00 @ 10 50
10x20, IC,			10 50 @ 11 00
			16 50

Block Tin.—

Large Pigs	30c	Bars	32c
Small	31c	Straits, 2c. higher.	

Zinc.—Sheet, 500 to 1000 lb. Casks 10½c
Loose Sheets 10¾c
Slab Zinc or Spelter 6¾ to 8c

Copper.—Bottoms 35c
Sheathing 33c
Planished 38c
" Boiler lengths 40c
Ingot 24c to 26c
Bolt 40c

Braziers' Sheets.—

30x60, 6 to 10 lbs.	₩ lb 41c	30x60, 15 to 100 lbs.	₩ lb 35c
30x60, 10 & 12 lbs.	" 38c		

Solder.—F. S. & Co.'s make.

Best Fine	22c	Roofing	18c
No. 1	20c	Braziers' or Spelt. Sold.	35c

Antimony 18c
Babbit Metal—F. S. & Co.'s 16c
No. 2 14c

Sheet Iron.—

	Common.	Com.	Smooth Charcoal.	Smooth Juniata.
No. 24	5 c	6 c	7½c	9½c
25 & 26	5¼c	6¼c	7¾c	9¾c
27	5½c	6½c	8 c	10 c

Galvanized Iron dis 20 %

No. 16 to 20	12c	No. 27	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—

Perfect	20c	No. 1 Stained	19c
		In Sheets, 1c. higher.	
American Russia.—		B	10½c
A	15c	In sheets, 1c higher.	

Lead.—

Pig	7¼c	Lead Pipe, in full coils	8¼c
Bar	8¼c	Lead Pipe, when cut	8¾c
		Sheet Lead	8¾c

Wire—Bright dis 35 %
Coppered dis 30 %

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.)

Augers.—Watrous Ship dis 10 %
L'Hommedieu Ship dis 15 %
Axes.—Forester's Favorite, Bronzed $12 00
Blue Jackets, Blue 11 5
Excelsior, Black 11 00
Chopper's Prize, Bronzed 10 50
Iced Cross, Red 10 00
Red Cross, Handled 12 50
Boy's Handled Blue Jackets 12 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2 50. B (No. 1) $2 00. C (No. 2) $1 50 ₩ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1 $1 70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 26, No. 1 1 80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1 2 8
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 26, No. 1 2 50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1 3 38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 26, No. 1 3 50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1 per pair, 50c.
Common, 6, No. 1 " 45c.
Blind Hinges.—
Parr or Washburn's per set $9 00
Band Rasps.—
Parr or Washburn's per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works" dis 50&10 %
Borax.—Best Refined ₩ lb 14c
Borers.—Angle, Backus dis 50 %
Boring Machines.—Angle each $4 75
Common, Snell's quality each 3 75
Braces.—Barber's dis 40&5 %
Backus' dis 50 %
Spofford's dis 50 %
Amidon dis 50 %
Brackets.—Star Bronzed dis 50&10 %
Star Japanned dis 60&10 %
Store shelf dis 35 %
Brass Faucets.—L. P. & Co. dis 25 %
Butts.—Union Drilled Loose Joint dis 60&10 %
" " Wire Fast Joint dis 55 %
" " Acorn Loose Joint dis 60&10 %
Brass Butts dis 30 %
Wrought Table Butts and Back Flaps dis 30&10 %
Wrought Narrow Butts dis 30&10 %
Can Openers—Sprague's dis 50 %
No. 1, Iron Handle $4 00
No. 2, Wood Handle 4 50
Cartridges.—"U. S. Cartridge Co." dis 50&10 %
Chisels.—"Buck Bros." Shank Goods add 20 & 22½ %
Sockets add 22½ & 25 %
Churns.—Lightning—
Redheffer patent 3 4 5 6 gall
per doz $22 00 $27 00 $31 50 $36 00
Coal Hods dis 35 %
Fancy Japanned, No. 4, 15 in., $8 00; 5, 16 in., $9 00; 6, 17 in., $10 00.
Fancy Galvanized, No. 4, 15 in., $11 50; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Galv'd, No. 4, 15 in., $15 00; 5, 16 in., $16 00; 6, 17 in., $17 00.
Morning Glory, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Morning Glory, Galv'd, No. 4, 15 in., $15 00; No. 5, 16 in., $16 00; No. 6, 17 in., $17 00.
Compasses and Dividers.—Bemis' dis 35 %
P. S. & W. dis 25 %
Cordage.—Manila (usual trade dis.) ₩ lb, 17c
American Tarred Hemp Lath Yarn ₩ lb, 10c
Corn Hooks per doz $2 75
Cow Ties dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle $3 70
No. 35, " 3 " No. 6, " Snap 3 90
No. 40, " 3½ " No. 5, " Toggle 4 23
No. 45, " 3½ " No. 5, " Snap 4 40
No. 50, " 4 " No. 4, " Toggle 4 85
No. 55, " 4 " No. 4, " Snap 5 00
No. 60, " 4½ " No. 3, " Toggle 5 60
No. 65, " 4½ " No. 3, " Snap 5 80
Crow Bars.—Iron, Steel Points ₩ lb, 5½c
"Sweet" Steel Bars ₩ lb 11c
Brown's Steel Bars ₩ lb 10c
K. P. & Co. Extra Drill Steel ₩ lb 15c
Dividers.—Cook's Nickel Plated dis 15 %
Door Springs.—Stilson's Patent.—
No. 7, Light inside doors, $12 00 dis 25 %
No. 8, " outside " $18 00 dis 25 %
Torrey's $4 00
Egg Beaters.—Lightning, Redheffer pat 1 qt. 2 qts.
per doz $8 00 $12 00
Emery.—Alden ₩ lb 6½c
Wellington Mills ₩ lb 10c
Files.—Earl Smith & Co.'s English $5 to £ gold
American $5 to £ currency, less 12½ %
Nicholson new net list
" Regular Taper dis 12½&5 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62; 4, $1 88; 4½, $2 13; 5, $2 50.
Funnel Irons.—$2 50 2 50 2 50 3 25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3 50 3 75 4 00
5, 5½, 6 inch.
Hammers.—Maydole dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $8 75
" " " " " bell face, No. 1, $11; 1½, $9 75.
Hangers & Rollers.—Novelty dis 30 %
Anti-Friction $1 25 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co. dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling 0, $4 75; 1, $5 25; 2, $5 75
Claw 1, 5 75; 2, 6 25
Lathing 1, $5 50
Axe Pattern 1, $7 00; 2, 7 50
Broad 0, $5 75; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75; 5, $12 75; 6, $14 75.
Hinges.—Strap and T, Stanley Works dis 35&10 %
Plate, Loose and Fast Joint ₩ lb 6c
Wrought Screw Hook ₩ lb 6½c
Lanterns.—Tubular No. 0 $9 50
Guarded, No. 74, (with kerosene oil and candle burners) 6 25
Lead.—Sheet and Pipe 9c—less 10 %
Locks.—Norwalk Lock Co. dis 45&5 %
Mattocks.—
K. P. & Co. axe finish, long cutter $13 00—dis 10 %
Short cutter 12 75—dis 10 %
Meat Cutters.—"Miles's" Challenge dis. 30 %
No. 1, $22 00; 2, $30 00; 3, $40 00.
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₩ lb
Nails.—10d and larger $3 60
Nail Pullers.—Little Giant—Small per doz., $22 00
Little Giant—Large 30 00
Padlocks.—Wilcox dis 50&2½ %
All Brass, 2¼ inch, 2 keys, job lot $9 00
Paper.—Tar'd Sheathing ₩ lb 2 c
Dry Sheathing " 3½c
" "Beaver Brand" Rosin Sized " 4½c
Tar'd " " " " 3½c
Felt " " " " 4½c
Picks.—
K. P. & Co. Axe Finish ₩ doz 5 to 6 $8 50; 6 to 7 $9 00
" " Solid Eyes 5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hat and Coat all wood—
2 in. ₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
"Partridge," 6 square tine ₩ doz $12 00
Shumway & Co., 6 round tine ₩ doz $9 00
Pulleys.—Axle 1¾ No. 15, 31c; 1¾ No. 18, 33c; 1¾ No. 28, 42c; 2 No. 29, 49c.
Nashua, Bronzed Face 1¾, 80c; 2, 97c
Steel Axle " " 2, $1 00
Pulley Blocks,—"Best Boston Make" net
Common Strapped Blocks—

4	5	6	7 inch.
Single, 75c.	85c.	$1 00	$1 13 each.
Double, $1 00	1 12	1 25	1 60 "

Inside Iron Strapped Blocks—

5	6	7	8	9	10 inch.
Single, $1 00	1 12	1 38	2 00	2 25	1 75 each.
Double, 1 88	2 20	2 63	3 63	4 00	5 00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

5	6	7	8	9	10 inch.
Single, $1 25	1 50	1 65	2 20	2 65	3 50 each.
Double, 2 50	3 00	3 38	4 63	5 00	6 50 "

Plated Ware.—Rogers bros. new list dis 40&10 %
Plumb & Levels.—"Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels dis 50 %
No. 2, First Quality Levels dis 60&10 %
No. 3, Iron Pocket " dis 35 %
No. 4, Level and Plumb Glasses dis 60&10 %
No. 8, Iron Pocket Levels, per square and straight edge dis 50&10 %
No. 6, Improved Iron Bench Planes dis 20&10 %
Pocket Knives.—Conn. Cutlery Co. New net list
American Shear Co. dis 33⅓ %
Rail Barn Door.—For Novelty and Anti-Friction Hangers per foot 7c. dis 30 %
Rivets.—Black dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8,
13 13 14 14 15 16c ₩ lb net
Rubber Moldings.—"Harmon's" dis 10 %
No. 2, for Windows per foot, 5c
No. 3, for Doors per foot, 10c
No. 4, " per foot, 12c
Sad Irons.—Bliss & Drake ₩ lb 8¾
Sand Paper—0 to 2, $4 25; 2 to 3, $4 75 dis 10 %
Saws.—*Hand and Panel—*
Wheeler, Madden & Clemson's, same list as "Disston's" dis. 15 %
Disston's dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts per ft., 37c
" " " "Star" X Cuts. " 50c
" " " Champion X Cut. " 50c
" " " One Man X Cut. each, $2 25
Boynton's genuine Lightning X Cut per ft., 60c
" " " One Man X Cut. each, $2 25
Circular—Wheeler, Madden & Clemson's dis. 25 %
Mill— dis. 25 %
Screws.—American Screw Co. revised list dis 52½ %
Aiken's dis 50&10 %
Scythe Stones.—
"Willoughby Lake," first quality ₩ gross $6 50
" " second quality " 9 00
Shovels.—O. Ames new list dis 12½ %
M. B. & D. new list dis 12½ %
Snow, Malleable Iron Tip, D Handle—Agents for New England $6 50
Snow, Malleable Iron Tip, long Handle—Agents for New England 5 50
Sifters.—Coal, Rice, &c. $12 00
Spading Forks.—M. & E. dis 25 %
Stone Pickers.—"Partridge," original ₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's, $8 00 per doz
Traps.—Oneida dis 20 %
Blake's dis 30 %
Vises.—K. P. & Co.'s Solid Box. Blacksmith ₩ lb 18c
Parker's Parallel dis 10 %
Backus dis 25 %
"Howards." Parallel dis 20 %
Wardrobe Hooks.—Wire to drive ₩ gross $1 00
Weather Strips.—"Harmon's" per doz $5, d.3 10 %
Weights.—Window Weights ₩ lb 2½c
Wedges—Axe ₩ doz 38c
Wire.—
Eureka, in spools, No. 28 to 40 assorted ₩ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black ₩ ft 5½c
Wrenches.—Genuine Wrenches, G. A. Coes dis 40&5 %
Walton dis 50 %
Wringers.—
Novelty and Universal } Tub No. 2 } Less than 2 doz, $64 00
" " " 2 doz or more, 62 00
Bench A less than 2 doz $82 00; 2 doz or more $80 00
" B. " " 94 00 " " 88 00
" C. " " 108 00 " " 105 00
Eureka per doz $58 00
Withington, Cooley & Co.—
Hoes, Rakes, Forks, &c. dis 33⅓ %

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₩ box

I. C. Char. 10x14	$11 50	Char. Roof. IC, 14x20, 10	75
I. C. Coke 10x14	9 00	Coke " IC, 14x20, 10	25

Pig Tin.—₩ lb

Banca	31c	Straits	25c
English	24½c		

Zinc.—Sheet ₩ lb 11c
Iron.—Sheet Iron, Russia ₩ lb 17½
Sheet Iron, English " 5
" " American Refined " 5¾c
" " Galvanized " 10c
Plate Iron " 3¾c
Swedish and Norway Bar Iron, gold ₩ ton, $120 00
" " " Shapes, gold " 125 00
Norway Nail Rods, first quality, gold " 145 00
" " second " " 135 00
Best Refined Bar Iron " 64 50
The "Burden Best" Iron " 100 00
American Pig Iron, Foundry, No. 1, x " 20 00
" " " No. 2, x " 27 00
" " Gray Forge " 24 00
Scotch Pig Iron ₩ ton 36 50 @ 40 50
Wrought Scrap Iron " 35 00
Steel.—

₩ lb		German	10c
Eng. Tool	18c	Spring	8 c
American Tool	14¾c	Tire	6¾c
" Mach	10c	Sleigh Shoe	4¾c
Passemer	7¾c	Toe Calk	8 c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror ₩ doz, $8 50
Hudson's Rotary 9 00
Axes.—Wm. Manns, Red Warrior ₩ doz $11 50
Wm. Manns, W. Stewart's " 11 00
" Handled " $5 extra
" Double Bitted " 21 50
H. L. B. & Co.'s, L. & Co " 11 50
" Pioneer " "
" James & Co " 11 00
Hunt's " 12 00
Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles, Swedish Taper, Concord and Red Jacket Axles dis 12½ %
Common Axles, 1½ inch and upward ₩ lb 5½c
" " less than 1½ inch " 5½c
Bellows.—Best St. Louis make 50c ₩ in. dis 15 %
Bells.—Troy, Church, School and Farm Bells ₩ lb 42c
Bolts.—Arms, Bell & Co.'s Carriage and Tire dis 75 %
Arms, Bell & Co.'s Machine dis 20 %
Butts.—Western Butt Co.'s—
Narrow Fast Joint dis 33 %
Broad Fast Joint dis 50 %
" Loose " dis 65 %
Reversible dis 40 %
" Japanned and Silver Tipped dis 35 %
Loose Joint "Acorn" " dis 60 %
Corn Cutters or Hooks.—Solid Steel ₩ doz $4 00
Corn Knives.—Dunn Edge Tool Co.'s Clip " 5 75
Seymour Mfg. Co.'s Solid Steel Back " 5 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers dis 10 %
Hand Shellers Special rates
Cotton Gins.—Dubois Patent dis 10 %
Crow Bars.—Steel Pointed ₩ lb 7c
Drag Saw Machines.—
Culver's Pon Drag Saw dis 10 %
Robinson's Patent Sweepstakes Drag Saw dis 10 %
Farming Mills.—Nash & Cutt's dis 15
Feed Cutters.—Burdick's National dis 15 %
Baldwin's American dis 15 %
Sanford No. 1, $12 00; No. 2, $8 75 net
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks dis 33⅓ %
" " Handled Hoes dis 33⅓ %
Grinding Mills.—French Burr Mills net list
Challenge Feed Mills dis 20 %
Sedgeberer's Nonpareil Mills dis 10 %
Osage Corn and Cob Mill dis 20 %
Hammers.—Masons' Hammers ₩ lb 20c
Smiths' Hand 75c
Handles.—No. 1 Fork, Hoe and Rake dis 20 %
No. 2 Fork, Hoe and Rake dis 40 %
Harrow Teeth.—1 inch iron ₩ lb 4½c
⅞ and ¾ inch iron " 4¾c
Barbed or Headed ¾c extra
Hay and Cotton Presses.—
Dederick's Railroad dis %
" Perpetual net
Hay Knives.—
Dunn Edge Tool Co.'s ₩ doz $15 00—dis 15&5 %
Lightning (Weymouth's Patent) ₩ doz $20 00
Horse Hay Fork.—Neills' Harpoon dis 25 %
Horse Nails.—National Patent Pointed 20c rates
National Patent Pointed, extra finished 22c "
Horse Powers.—Pitts or Carey's Patent dis 10 %
Wheeler's Railway dis 10 %
Sandwich Lever dis 10 %
Horse Rasps.—Heller Bros. dis 45 %
Horse Shoes.—
Rhode Island (Perkin's Pattern) ₩ keg, $6 50
" Mule " 7 50
" Trotting Shoes " 9 00
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks ₩ doz $14 75 @ 15 25
" " Grub Hoes, oval eye " 10 75 @ 12 00
Nails.—Wheeling $3 50 rates
Picks.—Klein, Logan & Co.'s Railroad and Clay ₩ doz $10 50 @ 11 75
Klein, Logan & Co.'s Coal " 8 00 @ 9 00
" " Pon " 12 00
" " Stone " 15 00
" " Tamping " 17 50
Plows.—Avery's Cast and Steel dis 15 %
Collins Cast Cast Steel new list net
Pekin Steel new list net
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $47; No. 2, $30; No. 3, $32 dis 30%
Rakes.—Paddock's Premium Sulky $30 00 net
St. Louis Revolving 14 tooth 5 50 net
" " 16 " 6 00 net
" Hand Hay Rake dis 10 %
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives dis 20&5 %
" " Sections dis 25 %
Road Scrapers.—Steel dis 25 %
Cast Iron dis 10&2½ %
Sad Irons.—Monitor Brand, Silver Polished ₩ lb 4c
Sash Weights.—Standard Solid Eyes ₩ lb 3¾c
Saws.—Hubbard, Lippincott, Bakewell & Co.'s dis 10
Branch, Crooks & Co.'s dis 15
Scythes.—Dunn Edge Tool Co.'s Low list dis 25
Scythe Stones.—No. 1 Ind'a Pond ₩ gr's, $7 00
Extra Indian Pond " 7 50
Premium " 10 50 } dis 25
Diamond Grit " 13 00
Shovels and Spades.—Myers & Armor dis 15 %
Grain Scoops, (Pat. Corrugated Straps) M. & A. dis 15 %
" " T. Rowland's dis 15 %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished ₩ lb, 15c
Solid Cast Steel " 35c
Spathe and Cradles.—Seymour Mfg. Co.'s dis 30 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express dis 12½ %
Blue Seat Springs dis 15 %
Thimble Skeins.—Pump & Skein Co.'s dis 60 %
Vises.—Solid Box ₩ lb 16c
Wilson Mfg. Co.'s dis 15 %
Wheelbarrows.—Railroad & Garden new list net
Wrenches.—Coes' Genuine dis 25&5 %
Coes' Pattern dis 50 %
Wringers.—Crown ₩ doz $60 00
Wagons.—Whitewater Farm Wagons—
Thimble Skein No. 3, $80; 3¼, $84; 3½, $85
Iron Axle No. 1½, $75; 1⅝, $90; 1¾, $95

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Chas	12 00 @ 12 50	IX, continuous, 20 in. x 200 ft	
IX, 10x14, "	15 00	IC, 10x14, best Coke	$11 50
IC, 12x12, "	13 00	IC, 10x14, good Coke	11 00
IX, 12x12, "	15 50	IC, 10x20	17 50
IC, 14x20, "	13 50	IX, 14x20	14 50
IX, 14x20, "	16 00	IC, 14x30	11 00
IC, 14x20, Terne	11 75 @ 12 00	IC, 11x30, Coke Lead	9 00
IX, 14x20, "	14 50	IC, 10x14, punch'd for Safes	11 00
IX, 20x28, "	23 00 @ 24 00		
IX, 20x28, "	27 00 @ 28 00		
IC, continuous 20 in. x 200 ft			

Block Tin.

Large Pigs	Straits 30c	Bars	32c
Small "	English 31c		

Sheet Zinc.

Casks	₩ lb 10¼c	Sheet	₩ lb 11¼c

Solder.

No. 1, Refined, in bars or plate	17c
No. 2, " " "	16c
Pig Lead	7¼c

Sheet Copper.—18 to 100 lbs. Sheets 30x60 32c
14 to 16 lbs., Sheets 30x60 32c
10 to 12 lbs., " and 20x52 30c
6 to 9 lbs., " 30c
Tinned, 14 and 16 oz. 14x48 35c
Planished, 14 and 16 oz. 14x48 38c
" No. 7, 8 and 9 40c
Copper Bottoms 43c

Sheet Iron.—

	Com'n.	Sm'th.	Char'l.	Jun'ta
No. 16 to 20	4¾c	5 c	7c	9½c
No. 22 to 24	4¾c	5 c	7c	9½c
No. 25	4¾c	5¼c	7¾c	9¾c
No. 27	5 c	5½c	7¾c	10c

Galvanized Iron dis 22½ %
Iron Rivets dis 25 %
Iron Wire dis 35 %
Coppered Market Wire dis 30 %
Copper Rivets and Burs dis 25 %
Russia Iron.—Nos. 9, 10, 11 and 12. ₩ lb 20c
No. 1 stained. ₩ lb 18c
Imitation Russia. ₩ lb 15
Retinned Stamped Ware dis

TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

Shive Governor Co

BETHLEHEM, PA.

ALSO,

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR.

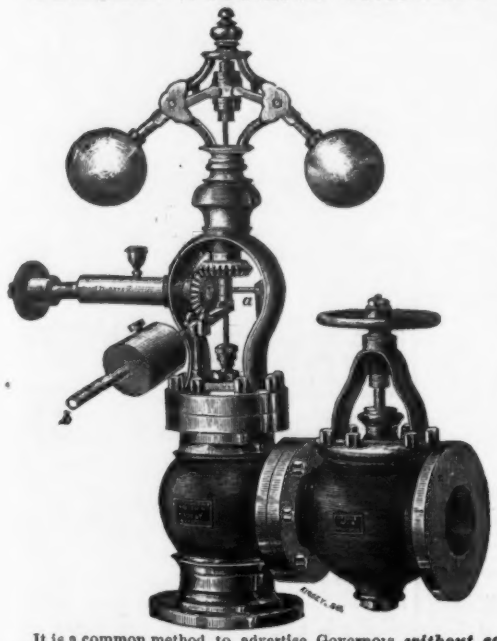
The Best and Cheapest Watcher of the Watchman made

PRICE ONLY $15.

Circulars sent free.

February 10, 1875. REDUCED PRICE LIST OF THE

JUDSON PATENT IMPROVED GOVERNORS.



☞ When Governors are ordered, be particular and say Governor with Stop Valve, or without Stop Valve; and either Black, Finished or Portable, as you may require, and with or without Lever Attachment.

For dimensions and other particulars send for Illustrated List.

Capacity of Valve or Diameter of Steam Pipe in Inches.	Price, Black.	Price, Bright Finish.	Price, Portable.	Price of Lever Attachment for altering speed.	Price of Stop Valve.
⅜	18·00	20·00	17·00	..	..
½	20·00	22·00	19·00	..	..
1	24·00	27·00	22·00	2·00	5·25
1¼	29·00	32·00	27·00	2·25	6·65
1½	34·00	38·00	31·00	2·50	8·50
2	41·00	46·00	38·00	2·75	11·50
2¼	47·00	54·00	..	3·25	16·00
2½	50·00	57·00	47·00	3·50	17·00
2¾	55·00	62·00		3·75	19·00
3	62·00	70·00		4·25	22·00
3½	71·00	80·00		4·50	27·00
4	81·00	92·00		5·00	32·00
4½	91·00	103·00		5·50	37·00
5	102·00	114·00		6·00	42·00
5½	116·00	129·00		6·50	48·00
6	134·00	148·00		7·00	55·00
7	160·00	176·00		8·00	69·00
8	199·00	219·00		9·00	83·00
9	230·00	255·00		10·00	..

No Larger Portable made than 2½ in.

No Charge for Boxing & Cartage.

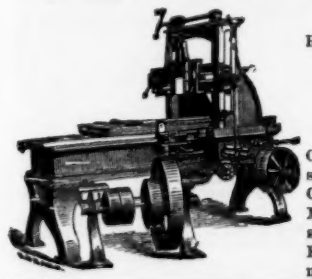
It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the above list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

JUNIUS JUDSON & SON, Rochester, N. Y.

The Pratt & Whitney Co.,

Hartford, Conn.,

Have constantly on hand and making

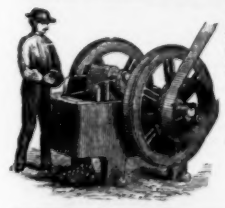


Drop Hammers

Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.

BLAKE'S PATENT STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds o hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES.

Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, &c.**

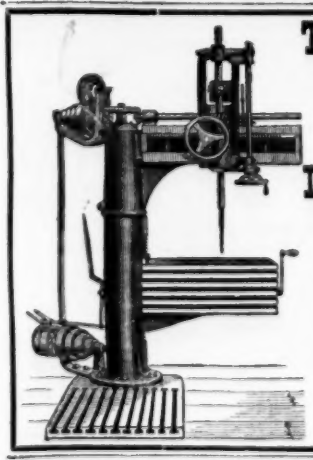
For Illustrated Circulars, and particulars, address,

BLAKE CRUSHER CO., New Haven, Conn.

THORNE, DeHAVEN & CO.

21st Street, above Market,

PHILADELPHIA.



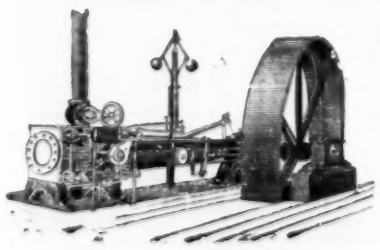
DRILLING MACHINES,

PORTABLE,
RADIAL,
MULTIPLE,
VERTICAL,
HORIZONTAL,
SPECIAL,

CORLISS STEAM ENGINE.

The Best in the World for Economy in Fuel and Cost of Running.

BUILT BY



Robert Wetherill & Co.,

Chester, Pa.,

Engineers, Machinists, Founders,

And BOILER MAKERS.

Stationary Engines, Shafting, Mill Gearing, Hoisting Machines, Improved Piston Packing and Machinery.

Special attention given to boring Ports and Cylinders.

A Written Guarantee given with our Pumps.

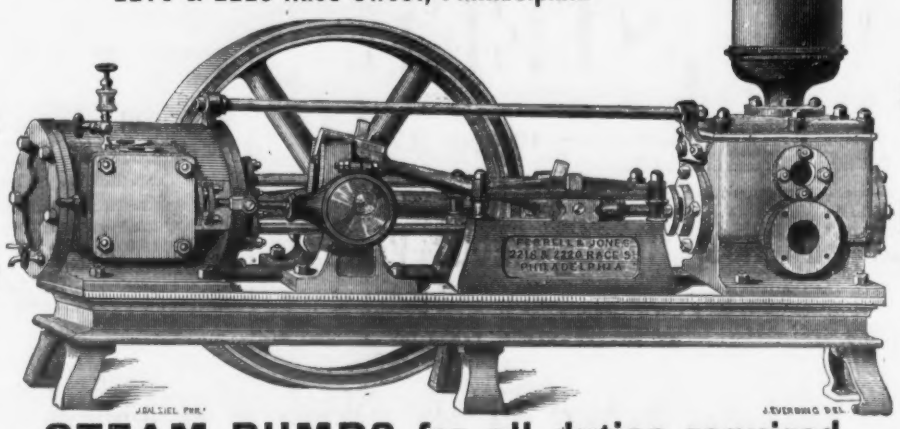
ENTERPRISE HYDRAULIC WORKS,

2218 & 2220 Race Street, Philadelphia.

Fan Blowers.

Piston Blowers,

"FOULDS" Patent Water Elevator.



Our Fly Wheel STEAM PUMP is admirable For Fire Purposes.

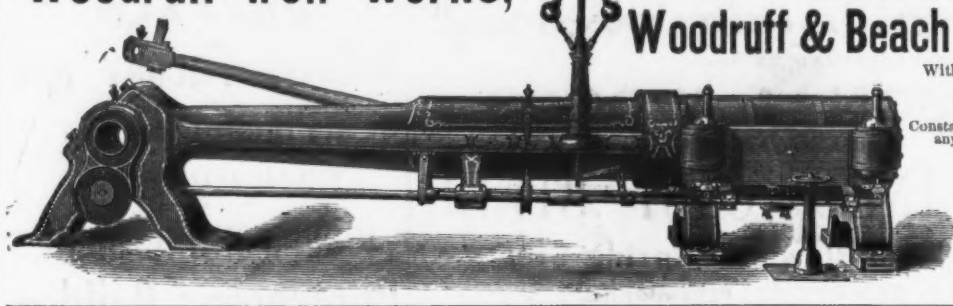
STEAM PUMPS for all duties required.

Centrifugal, Hand and Power Pumps, Special Double Plunger Pumps for Mining Purposes. Boiler Feed and Tank Pumps.

Woodruff Iron Works,

Office, 223 State Street, Hartford, Conn.

Manufacturers of the Celebrated



Woodruff & Beach Steam Engine,

With recent valuable improvements.

Steam Boilers

Constantly on hand and made to order any size or style. Special attention given to the manufacture of

MILL WORK

And all kinds of Machinery.

CASTINGS

Of any size or style. Direct all letters to **The Woodruff Iron Works, Hartford, Conn.**, as the Woodruff & Beach Iron Works and firm of Woodruff & Beach are both dissolved.

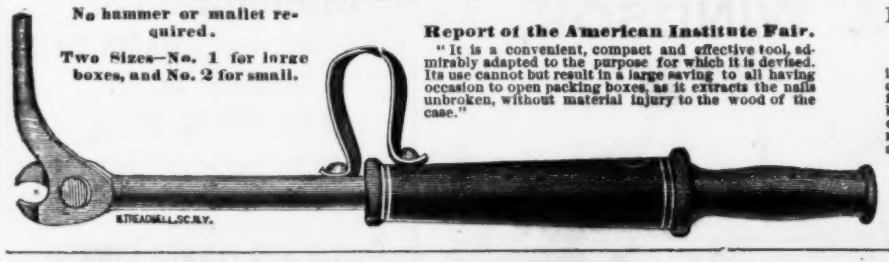
MALTBY, CURTISS & CO., Waterbury, Conn.,

Manufacturers and Sole Proprietors of

CAPEWELL'S GIANT NAIL PULLER.

No hammer or mallet required.

Two Sizes—No. 1 for large boxes, and No. 2 for small.



Report of the American Institute Fair.

"It is a convenient, compact and effective tool, admirably adapted to the purpose for which it is devised. Its use cannot but result in a large saving to all having occasion to open packing boxes, as it extracts the nails unbroken, without material injury to the wood of the case."

Reasons why you should Use the Nail Puller.

1st. The edges of the boxes are never split or injured. 2d. No broken Nails in the box or cover. 3d. The box and cover remain sound for future use. 4th. Nails are drawn without breaking or bending. 5th. The box can be opened in half the time required by the old method with chisel or crane. Send for prices, and other information, to

MALTBY, CURTISS & CO.,

Hardware Commission Merchants,

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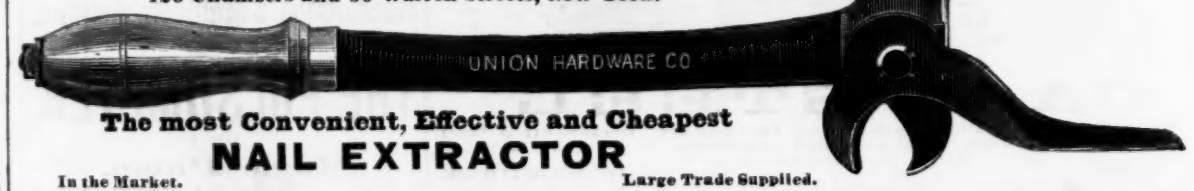
UNION HARDWARE CO.,

120 Chambers and 50 Warren Streets, New York.



The most Convenient, Effective and Cheapest

NAIL EXTRACTOR

In the Market. Large Trade Supplied.

Knowles Patent Steam Pumps

MANUFACTURED BY THE

KNOWLES STEAM PUMP WORKS,

WARREN, MASS.

WAREHOUSES:

14 & 16 Federal Street, Boston, 92 & 94 Liberty Street, N. Y.

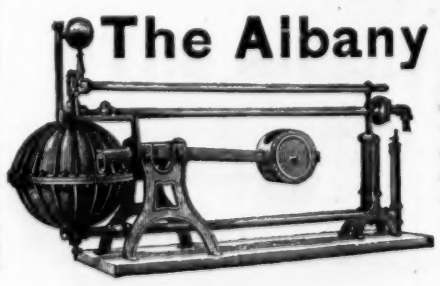
Cut above represents regular Boiler Feed Pump, No. 3 and 4. Showing New Patent Valve Motion, and Hand Power LEVER Attached and Detached.

FIRE PUMPS, a specialty.

Mining Pumps (both Double Acting Plunger, and Piston Pattern,) which we guarantee to run absolutely noiseless on any lift from 100 to 600 ft., at a single lift, a specialty. Pumps for every possible duty. Prices as low as any, and our workmanship and material altogether the Best.

Every machine furnished under a complete guarantee.

The Albany Steam Trap.



This Trap automatically drains the water of condensation from *Heating Coils*, and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

TOWNSEND & BLESSING,

Albany, N. Y.

Whittier Machine Co.,

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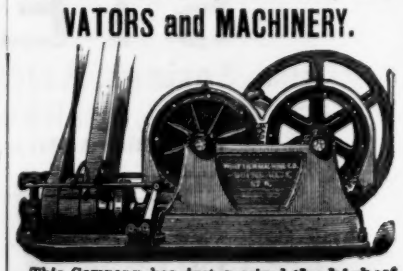
Manufacturers of

STEAM ENGINES, BOILERS, ELEVATORS and MACHINERY.



This Company has just received **the highest award, a Gold Medal, for Safety Elevators,** from the Massachusetts Charitable Mechanics Association.

CHARLES WHITTIER, Prest. JAMES STURGIS Treas.

Patented Steam and Hydraulic, April 1, 1868.

EAGLE PACKING,

Of various sizes for **ENGINES and PUMPS,** manufactured by JAMES GLANDING & CO., No. **115** Queen St., Philadelphia. What the proprietors claim for the Eagle Packing: 1. Its general adaptation to all purposes for which packing is used. 2. Its durability. It will outlast any other article in use. 3. Its cheapness. It can be furnished to the consumer at a lower rate than any other packing

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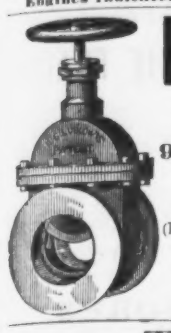
Drawings made to order. Repairing of all kinds promptly attended to. Blacksmithing executed in all its branches.

Machinery, &c.

ANDREW WATSON,
MACHINIST and ENGINEER,
Nos. 537 & 539 Dickinson Street,
Near Trenton Avenue, 19th Ward, PHILADELPHIA.

Builder of ***Vertical Steam Engines and Boilers,*** peculiar for their economy of space and fuel, safety and quickness in raising Steam. Also, sole manufacturer of ***Improved Balance Governor*** with automatic stop, ***Balance Slide Valve, Safety Valves, Stop Valves, Improved Pistons for Engines,*** which require no setting by the Engineer. Engine Builders and Dealers supplied with ***Governors, Stop Valves, Safety Valves, &c., &c.*** These governors are fitted up in the very best manner, with brass Valves and Seats, which will not corrode or stick fast. Guaranteed to regulate under any irregular load which an Engine is subject to. Millwright work executed, and Machinery in general satisfactorily repaired.

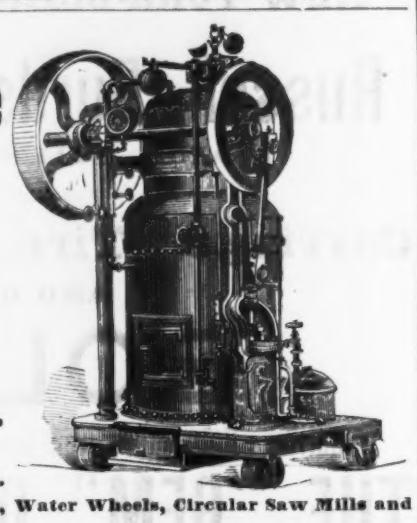
Engines Indicated Promptly and with the Greatest Accuracy.



Ludlow Valve Mfg. Co.,
OFFICE AND WORKS:
938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,
VALVES
(Double and Single Gate, ¾ in. to 48 in.—outside and inside Screws, Indicator, &c.)
for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

THE
Shapley Engine
Patented Feb. 10, 1874.



COMPACT,
PRACTICAL,
DURABLE,
ECONOMICAL.
$200·00.
Cheaper than any Engine offered of the same capacity.
MANUFACTURED BY
SHAPLEY & WELLS,
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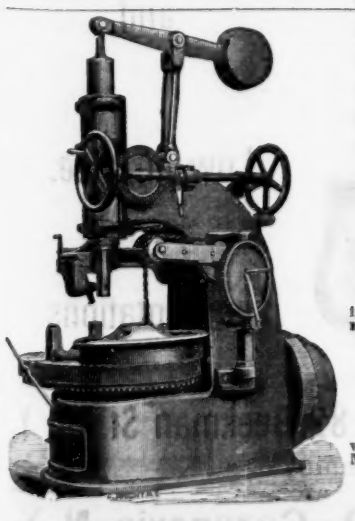
Manufacturers of **Steam Engines, Boilers, Water Wheels, Circular Saw Mills and Mill Work generally.**

Fairmount Machine Works,
Office, 2106 Wood St., Philadelphia, Pa.

THOMAS WOOD, *Adjustable Self-Oiling Post Hanger 6 in. from post to center of shaft.*
MANUFACTURES AS SPECIALTIES,
POWER LOOMS, with (new) Patent Box Motion. SPOOLING, BEAMING, DYEING and SIZING MACHINES.
BOBBIN WINDING MACHINES—wind direct from hank or skein to shuttle bobbin.
SHAFTING, with Patent Adjustable Self-Oiling Bearings.
PLANS taken, and FACTORIES fitted out complete with Shafting and Gearing.
PULLEYS, from 4 inch to 10 feet diameter, of most Approved Pattern.
SELF-ACTING WOOL SCOURING MACHINES, (Yewdall's Patent.)
Machine and Foundry Work in all their branches. Send for Price List of Pulleys & Shafting.



NEW-YORK STEAM ENGINE CO.
MANUFACTURERS OF
MACHINISTS' TOOLS
OF ALL DESCRIPTIONS
CHAS. A. CHEEVER, PRES. GEO. Q. DOW, SEC'Y. No. 98 CHAMBERS ST. NEW-YORK

We have the best and most complete assortment of
MACHINISTS' TOOLS,
in the country, comprising all those used in **Machine, Locomotive and**
R. R. REPAIR SHOPS.
We make a specialty of manufacturing
Gear Wheels of all Descriptions.
which are made absolutely perfect, with **Patent Gear Molding Machine.**
☞ For Photographs, Prices and Description, etc., address
N. Y. STEAM ENGINE CO.,
98 Chambers Street, New York.

STURTEVANT
Pressure Blowers, Fan Blowers and Exhaust Fans.
10,000 SOLD IN SIX YEARS.
SEND FOR ILLUSTRATED CATALOGUE.
B. F. STURTEVANT, 72 Sudbury Street,
BOSTON, MASS.

Machinery, &c.

COMBINATION.

Having purchased all of the Right, Title and Interest of the firm of DIBBLE & HINE, of New Haven Ct., in the

Hine Patent Bolt Cutter and Nut Tapping Machines,

and having combined the "Hine Patent and Chapin Improved Bolt Cutter," we now offer to the public the improved

HINE PATENT BOLT CUTTER, the best machine in the market.

Its superiority over all other machines is the ease and rapidity with which the Dies can be changed, and the quality and quantity it can produce. Any boy can, in one minute, change the Dies from one size to another. We build machines to cut from one-quarter inch to and including two inches. Hence we can furnish the Bolt Shop, Railroad Shop, Machine Shop, or any shop with the **cheapest** and **best** Bolt Cutter in the market.

Prices and any information given on receipt of letter, by addressing

THE CHAPIN MACHINE COMPANY,
Pine Meadow, Conn.

TIRE BLANK AND RIVET MACHINES, BOLT HEADERS, &c., constantly on hand and made to order.

Established 1848.

WM. SELLERS & CO.,
1600 Hamilton Street, PHILADELPHIA.,
Engineers, Iron Founders and Machinists.
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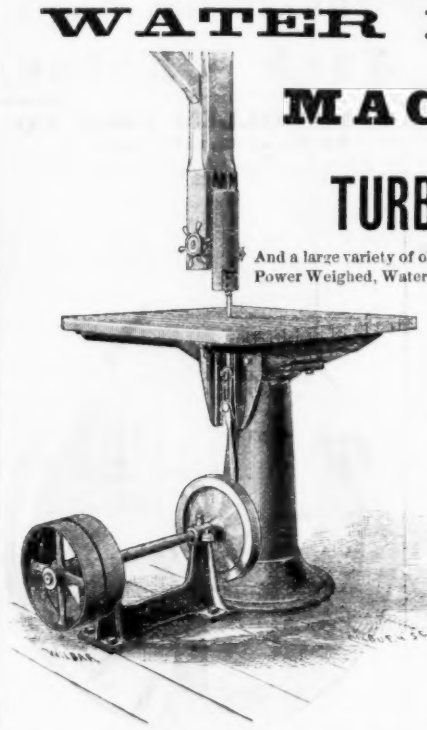

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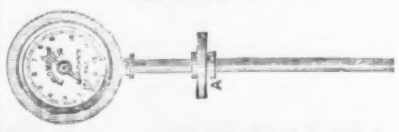

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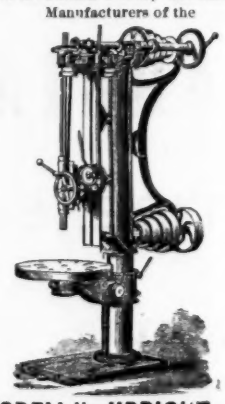

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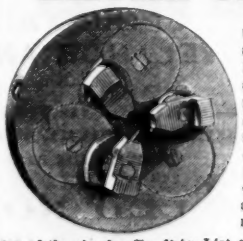

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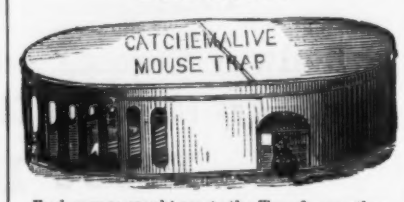

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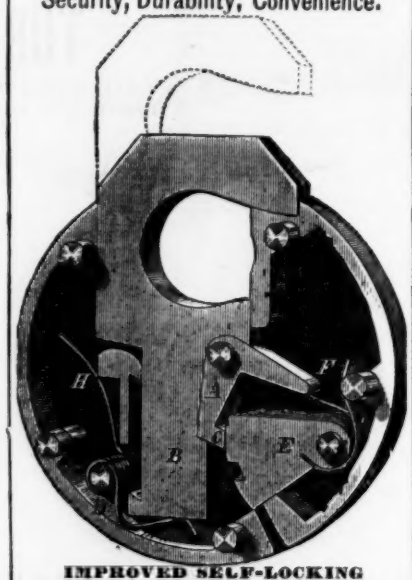

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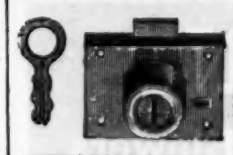

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